



**BREAK
FREE**
FROM YOUR OLD PBX

MANUAL
3CX Phone System for Windows
Version 12.5

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Introduction, Licensing, Support

What is 3CX Phone System for Windows?

3CX Phone System is a software based PBX for Windows that works with SIP standard based IP Phones, SIP trunks and VoIP Gateways to provide a full PBX solution – without the inflated cost and management headaches of an 'old style' PBX. The IP PBX supports all traditional PBX features but also includes many new mobility and productivity features. An IP PBX is also referred to as a VoIP Phone System, IP PBX or SIP server.

Calls are sent as data packets over the computer data network instead of the traditional phone network. Phones share the network with computers so no separate phone wiring is required. With the use of a VoIP/PSTN gateway, you can connect existing phone lines to the IP PBX to make and receive phone calls via a regular PSTN line. You can also use a VoIP Provider, which removes the requirement for a gateway.

3CX Phone System interoperates with standard SIP softphones, IP phones or smartphones, and provides internal call switching, as well as inbound and outbound calling via the standard phone network or via a VoIP service.

How an IP Phone System Works

A VoIP Phone System generally consists of the IP PBX server, one or more SIP based phones and a VoIP/PSTN Gateway or a VoIP service provider. The IP PBX server is similar to a proxy server. SIP clients, being either softphones or hardware based phones, register with the IP PBX server. When they wish to make a call they ask the IP PBX to establish the connection. The IP PBX has a directory of all phones/users and their corresponding SIP address and connects an internal call or routes an external call via either a VoIP/PSTN gateway or a VoIP service provider.

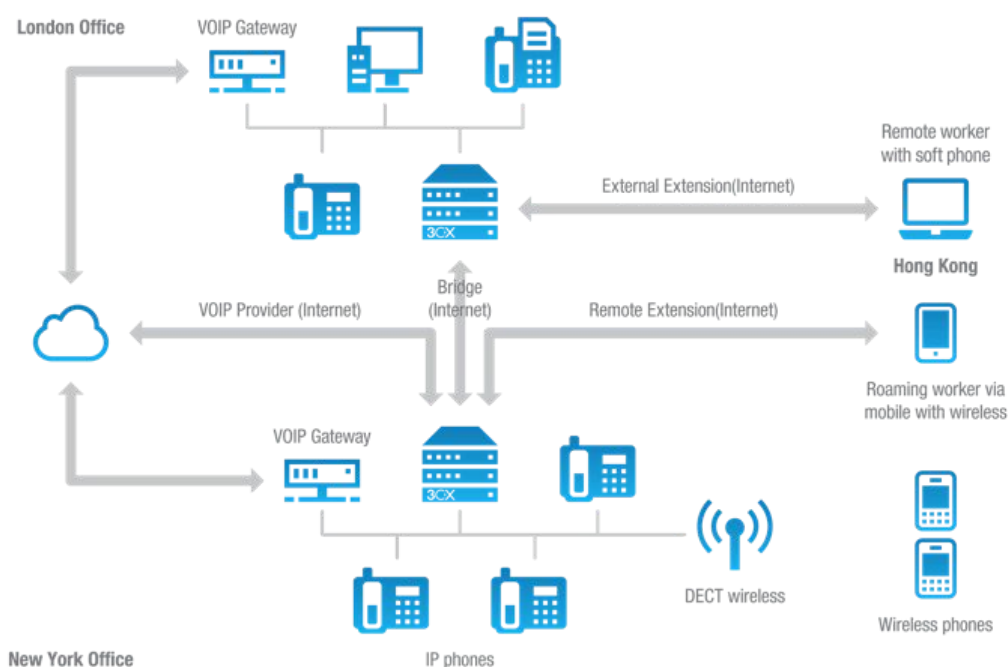


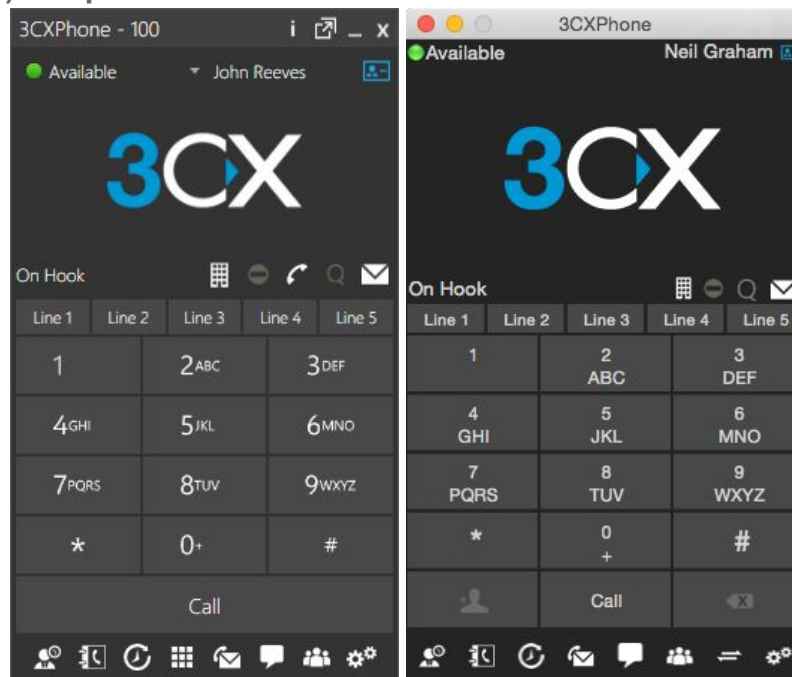
Figure - VoIP Phone System Overview

The image illustrates how an IP PBX integrates with the network and how it uses the PSTN and/or the Internet to connect calls.

SIP Phones

A VoIP phone system requires the use of SIP phones. These phones are based on the Session Initiation Protocol (SIP), an industry standard to which all modern IP PBXs systems adhere to. The SIP protocol defines how calls should be established and is specified in RFC 3261. SIP allows the possibility to mix and match IP PBX software, phones and gateways. This protects your investment in phone hardware. SIP phones are available in several versions/types:

Software (based) SIP phones



3CXPhone for Windows (left), 3CXPhone for Mac (right)

A software based SIP phone is a program which makes use of your computer's microphone and speakers, or an attached headset to allow you to make or receive calls. Examples of software SIP phones are 3CXPhone or X-Lite from Counterpath.

Hardware (based) SIP Phones



Hardware IP Phones: snom 760 left, Yealink T46 (with sidecar) right

Hardware based SIP phones look and behave like a normal phones. They are actually mini computers that connect directly to the computer network. They have an integrated mini hub, allowing them to share a network connection point with a computer, eliminating the need for an additional network point for the phone.

Smartphones (iPhone and Android)



Using an Android Smartphone with 3CX

iPhones and Android phones can be used as clients for 3CX Phone System, using the freely available 3CXPhone for Android and 3CXPhone for iPhone. Using 3CXPhone, your smartphone becomes a wireless desk phone in the office, and can be used to answer and receive company calls while out of the office via WiFi or 3G (Providing your mobile service provider supports VoIP over 3G).

3CX Phone System Licensing

Licensing is based on the number of simultaneous calls that your company requires, including both external and internal calls. Each 3CX Phone System allows you to create an UNLIMITED number of extensions. To arrive at the correct number of simultaneous calls that you will need you must usually take the projected number of extensions and divide by two to four times depending on how much your organisation uses the phone.

3CX Phone System Editions

3CX Phone System is available in three different editions – Free, Standard and Pro. The Pro edition adds the following features:

- Advanced call center features - Supervisors can get real time statistics from agents phones. Besides monitoring queue status and which agents are logged on, you can also see the number of callers in queue, the number of answered/unanswered calls, call average and the longest wait times, the time an agent logged in / out of queue and more.
- Additional queue strategies including Call Back, Longest Wait, Least Used.
- Whisper – Whisper functionality on queue calls. Listen in to monitor Agent responses, and if an Agent responds wrongly you can provide feedback, that only the Agent can hear, allowing him / her to correct their answers.
- Listen in – Allows supervisors to listen in on calls to monitor Agent responses.
- Wrap up time – Wrap up time gives agents a configurable amount of time to enter notes in the customer record or follow up tasks before they have to take another call. Wrap up time can be configured per queue.
- Wallboard feature – A web page which can be displayed on a large screen with total number of calls waiting, number of answered and unanswered calls and average wait times.
- Alerts to file and email when a call is in the queue beyond a certain time. You can now

enforce SLA requirements and get notifications whenever a call is in a queue beyond a certain time. An email notification can be sent and the alert is also logged.

- Ability to log out an agent from the queue.
- More extensive reporting features.

Support

3CX Technical Support is available via our Support Portal for 3CX Partners (free) or with a 3CX Support package (Extra charge). Review our [Support Procedures and Pricing](#). We also have [Community Forums](#) from where you can obtain user to user support for our products.

Request Support via our Support System

If you are a 3CX Partner or have purchased a support package from 3CX, you can contact the 3CX support department via the [Support Portal](#).

Login details would have been provided to you by email.

3CX Phone System can automatically generate a file which includes all relevant support information. When requesting support, include the “Support info” data. **NO PASSWORDS TO PHONES OR VoIP PROVIDERS WILL BE INCLUDED.** The data will NOT be sent automatically. You will be prompted for a location to save the data, so you can check what data will be sent to us before you send it.

To generate the support info file:

1. Log in to the 3CX Management Console.
2. Go to **“Help” (top right) > “Generate Support Info”**.
3. You will be prompted for a location to save the data. Enter the filename for the support zip file to be generated. Click **“Save”**.
4. Login to the 3CX support system, and attach the information to your support request.
5. Include a detailed problem description. It should clearly indicate what the problem is, and when it occurs. Mention what hardware or VoIP provider you are using with 3CX Phone System. Indicate also what tests have been performed to isolate the problem.

Getting additional information

Support Page / Configuration Guides / Knowledge Base

3CX maintains a knowledge base / help page. Be sure to follow the configuration guides for the make and model of your VoIP gateway, SIP phone or Firewall. The configuration guides can be found in the main [Support Page](#).

3CX Phone System Blog

We highly recommend that you follow our product blog to keep up to date with the latest updates on 3CX Phone System. [The 3CX Blog](#). You can [Subscribe](#) to receive email alerts for new blog entries.

Find us on Facebook

Like us on [Facebook](#) and stay up to date with our product news and how-to's.

Feature Requests

If you would like to request a new feature, you can do this on our [Feature Requests Page](#), which

can be found at

Get 3CX Certified – Free Online Video Training

The free 3CX Certification program is designed to boost 3CX Partners and users productivity as well as their profitability by giving them the resources and knowledge they need to sell, deploy and support the award-winning 3CX Phone System for Windows.

3CX has two new certification levels and training videos:

- [3CX Certified Engineer](#)
- [3CX Advanced Certified](#)

These are a complete series of online training videos which gives 3CX Partners all the information they need to prepare for both certification levels.

Taking the 3CX Certification Test

After you have watched the videos, create a [3CX Academy](#) account or login to take the 3CX Certification test. You will need to have gained the 3CX Certified Engineer certification before taking the 3CX Advanced Certified test.

Community Support Forums

If you are evaluating 3CX or using the free edition, you can visit the [3CX Community Forums](#) to discuss questions with other 3CX users.

Please note that 3CX does not provide technical support via the forums. Official 3CX Technical support requires you to have a support package or be a [3CX Partner](#).

Installing 3CX Phone System for Windows

System Requirements

Supported Operating Systems

3CX Phone System v12.5 is supported on the following operating systems:

- Windows 7 Professional (x64)
- Windows 7 Ultimate (x64)
- Windows 7 Enterprise (x64)
- Windows 8 Pro (x64)
- Windows 8 Enterprise (x64)
- Windows 8.1 Pro (x64)
- Windows 8.1 Enterprise (x64)
- Windows 2008 R2 Foundation (x64 only)
- Windows 2008 R2 Standard (x64 only)
- Windows 2008 R2 Enterprise (x64 only)
- Windows 2008 R2 Datacenter (x64 only)
- Windows 2012 Foundation (max. 15 presence connections on IIS installations)
- Windows 2012 Essentials (max. 25 presence connections on IIS installations)
- Windows 2012 Standard
- Windows 2012 Datacenter
- Windows 2012 R2 Essentials (max. 25 presence connections on IIS installations)
- Windows 2012 R2 Standard
- Windows 2012 R2 Datacenter

Installations on Microsoft Windows server Core versions are not supported. Installations on Small Business Server 2008 are not recommended. However if you wish to use SBS, ensure that you use Abyss as a web server.

Supported Hardware and VM platforms

The 3CX Phone System is extensively tested to be run as a VM which eliminates the cost of separate hardware and adds high availability solutions based on the hypervisor infrastructure. Supported hypervisor platforms are:

- VMware ESX 5.X and above.
- Microsoft HyperV 2008 R2 and above. See [Hyper-V Page](#) for the specific settings for running 3CX Phone System.

Avoid using the 3CX Phone System on converted VMs (P2V) because a converted virtual machine might have timing issues, which causes the guest operating system not to sync with the timer of the hypervisor.

System performance depends on five key factors:

- How many simultaneous calls will the system handle?
- How many people will simultaneously connect to the presence server?
- Is call recording used?
- Are VoIP Providers used?
- Are call routings build mainly around queues and IVRs?

Based on these factors the hardware can vary from Intel Atom CPUs with 4Gb or RAM up to a multi socket/core system. General guidelines can be found online in these article:

- [Recommended Hardware Specifications for 3XC](#)
- [Large Enterprise Deployments](#)

Firewall & Network Considerations

The [Firewall & Router Configuration Guide](#) provides details on which ports to open.

Other requirements

- Latest version of Firefox, Google Chrome or Internet Explorer
- Microsoft .NET Framework version 4.5 or higher.
- You will need to have a good basic understanding of Windows Networking.
- A constant internet connection to [erp.3cx.com](#) on port 443.
- On demand connection to [downloads.3cx.com/*](#) on port 80 for 3CX Management Console downloads and additional information.

Note: Internet Explorer does not currently support the WebRTC/WebMeeting features.

Preparing the Windows host machine for installation

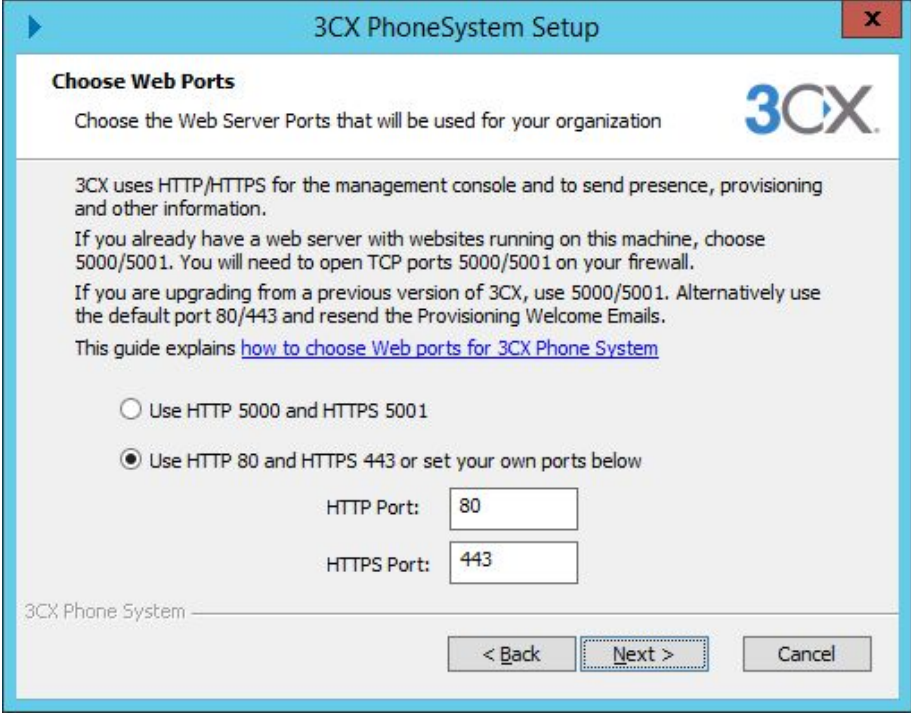
Tasks that **MUST** be completed before installing 3CX Phone System:

- Assign a static internal IP address to the host machine's network adapter.
- Install all available Windows updates & Service packs before installing the 3CX Phone System. Reboots after installing Windows updates may reveal additional updates. Pay particular attention to install all updates for Microsoft .Net before running the 3CX Phone System installation.
- Antivirus Software should not scan the following directories to avoid complications and write access delays:
 - C:\Program Files\3CX PhoneSystem*
 - C:\ProgramData\3CX*
- In case the 3CX Phone System host machine has multiple network adapters:
 - Disable unused network interfaces / WiFi adapters.
 - One active network interface **MUST** have a default gateway configured. It is not recommended to have multiple network interfaces all with default gateways configured.
 - Prioritize the network interface used for SIP to the first position from: Control Panel > In the search box type: adapter > Click "View network connections" > Press the Alt key, to reveal the menus, and select "**Advanced**" > "**Advanced Settings**" > "**Adapter and Bindings**" tab > **Connections section**.
- Ensure that all power saving options for your System and Network adapters are disabled (Set the system to High Performance).
- Do not install TeamViewer VPN Option on the host machine.
- Do not use the host machine as a VPN dial-in endpoint (Inbound or Outbound).
- Disable Bluetooth adapters if it is a client PC.

- 3CX Phone System must not be installed on a host which features DNS, MS SharePoint or Exchange services.
- See [Ports used by 3CX Phone System](#) for the list of required ports that need to always be available (not used by any other service).

Download and Install 3CX Phone System

1. [Download the latest version of 3CX Phone System](#).
2. Double-click on the 3CXPhoneSystem file. Read the system requirements and click “**Next**”.
3. Read our configuration recommendations and click “**Next**”.
4. You will be asked to review and accept the license agreement.
5. Select the installation folder path, 3CX Phone System will need a minimum of 10GB free hard disk space. You will need to reserve additional space to store voicemail files, recordings & voice prompts. Choose the location to install and click “**Next**”.
6. You will be asked whether you wish to use IIS or the in-built web server, Abyss. For all server operating systems we recommend choosing IIS.



The screenshot shows the '3CX PhoneSystem Setup' window with the 'Choose Web Ports' step. The window has a blue title bar and a 3CX logo in the top right. The main content area is white with a light blue border. It contains instructions about using HTTP/HTTPS for the management console and provisioning. Two radio buttons are present: 'Use HTTP 5000 and HTTPS 5001' (unselected) and 'Use HTTP 80 and HTTPS 443 or set your own ports below' (selected). Below the second radio button are two text input fields: 'HTTP Port:' with '80' and 'HTTPS Port:' with '443'. At the bottom, there are three buttons: '< Back', 'Next >' (highlighted with a dashed border), and 'Cancel'.

3CX PhoneSystem Setup

Choose Web Ports

Choose the Web Server Ports that will be used for your organization

3CX uses HTTP/HTTPS for the management console and to send presence, provisioning and other information.

If you already have a web server with websites running on this machine, choose 5000/5001. You will need to open TCP ports 5000/5001 on your firewall.

If you are upgrading from a previous version of 3CX, use 5000/5001. Alternatively use the default port 80/443 and resend the Provisioning Welcome Emails.

This guide explains [how to choose Web ports for 3CX Phone System](#)

☐ Use HTTP 5000 and HTTPS 5001

☒ Use HTTP 80 and HTTPS 443 or set your own ports below

HTTP Port:

HTTPS Port:

3CX Phone System

< Back Next > Cancel

7. Carefully choose the HTTP and HTTPS ports that you want to use.
 - If you are upgrading from a previous version of 3CX Phone System, or already run a webserver on your machine, use ports 5000/5001. Alternatively use the default ports 80/443 and resend the Provisioning Welcome Emails.
 - Make sure that the ports you choose are forwarded to the 3CX Phone System machine.

Read our guides below for more information regarding 3CX Phone system Requirements and Firewall / Router configuration.

- [Firewall Router Configuration Guide](#).
- [Selecting HTTP/HTTPS Ports to Use for 3CX Phone System](#)

3CX PhoneSystem Setup

Configure HTTPS

Enter the following information to create your SSL Certificate

3CX

Company Name
Enter your company name: interobit Ltd

Internal / local FQDN
Enter your 3CX Phone System internal fully qualified domain name (FQDN). FQDN must resolve correctly from the LAN! [How to setup an internal FQDN](#)
(If you do not have a DNS Server enter the Internal/Local IP)
pbx.interobit.local

External FQDN
Enter your 3CX Phone System external fully qualified domain name (FQDN). FQDN must resolve correctly from the Internet! [How to setup an external FQDN](#)
(If you do not have a DNS Server enter the External/Public IP)
pbx.interobit.com

Certificate Password
Create a certificate password.
.....

3CX Phone System Setup

< Back Next > Cancel

8. You will then be prompted to create your SSL certificate for HTTPS. Fill in your company name, internal/external FQDNs and certificate password.

Important Note: In the Internal / External FQDN fields you need to specify your Fully Qualified Domain Names, for example: “pbx.interobit.local” and “pbx.interobit.com”. This is required for the creation of your SSL certificate.

Make sure that you meet the following Requirements:

- FQDNs must resolve to the correct IP addresses.
- Your internal FQDN must resolve to the local IP of your PBX server.
- The external FQDN must resolve to the public IP.

If you do not have FQDNs you need to create them in your local DNS or use an Internet DNS Service.

Read our guides on

- [How to create an internal FQDN](#)
- [How to create an external FQDN](#)

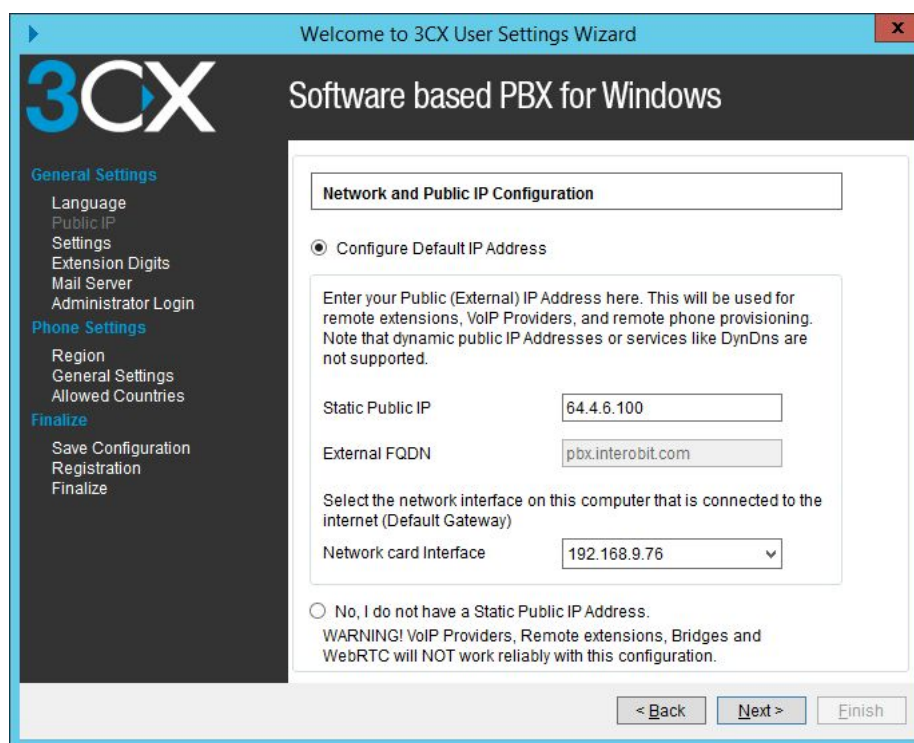
If you do not have a DNS server, You can enter your internal and external IP addresses in the corresponding fields.

Note: This is only for testing purposes and it is NOT recommended for use in a production PBX.

9. Click “**Next**”.
10. If you wish to review installation settings click “**Back**”, otherwise click “**Install**” to start the installation of 3CX Phone System.
 - Setup will now copy all files and install the necessary Windows services.
11. Once the install is complete you can proceed to configure your system by clicking “**Finish**”. The configuration wizard will open automatically.

3CX Phone System Configuration Wizard

The 3CX Phone System configuration wizard will walk you through a number of essential tasks that you need to do in order to get your system up and running. You will be asked to select the language that you want to use for 3CX Phone System.



The 3CX Configuration Wizard

1. The wizard will proceed and ask for the Static Public IP, and Local IP address which 3CX will use.

Note: If you do not have a Static Public IP, VoIP Providers, remote extensions and WebRTC calls **will not** work.

2. If you are upgrading or moving your 3CX Phone System installation, the wizard will give you the option to restore settings from a backup. (Backup created from your previous version or another installation of 3CX).
 3. The wizard will then ask you for the digit length of your extension numbers. This is a very **important** decision since **it cannot be altered later** without re-installing and re-configuring the PBX from scratch.
 4. You will then be asked to add your mail server name, reply to address, if necessary authentication details (username/password) and whether the connection should be made via a secure channel (TLS). These settings are used to send email notifications, voice mail and faxes.
 5. The 3CX Wizard will then ask you for a username and password to be used to login to the 3CX Phone System Management Console and manage the phone system. Make sure to use a strong password to prevent unauthorised access to your PBX. Username and password are both case sensitive.
 6. Confirm that the selected country, International Dialing code (exit code) and time zone settings are correct.
- The wizard auto-selects settings based on your Windows regional settings.

7. The wizard will ask you to create one extension which will be used as the Operator extension. Additional extensions can be created at a later stage using the 3CX Management Console.
8. The wizard will then prompt you to specify the countries and regions to which calls can be made. Calls to countries which are not selected, will be blocked. This feature reduces the risk of VoIP toll fraud.
9. Click **“Next”**. The 3CX Phone System Wizard will start services and and configure 3CX Phone System.
10. You will be asked whether you would like to receive a quote for a complete 3CX Phone System. Fill in your details and a 3CX partner will send you a detailed quote. You can skip this step if you do not need a quote at this stage or if you have already purchased a license key for the system.
11. Click **“Finish”**. Your browser will launch and open the 3CX Management Console web page.

Logging into the 3CX Phone System Management Console

When the installation is completed, point your web browser to the 3CX Management Console by entering the name of the machine. For example:

- HTTP: <http://pbx.interobit.com/management>
- HTTPS: <https://pbx.interobit.com/management>

If you are not using the default HTTP and HTTPS ports, you need to include your selected ports in the URL. For example, if you chose 5000 for HTTP and 5001 for HTTPS your links should be as follows:

- HTTP: <http://pbx.interobit.com:5000/management>
- HTTPS: <https://pbx.interobit.com:5001/management>

Enter the username and password that you specified during setup, select the language you would like to use and click the **“Login”** button. Note that the username and password are both case sensitive.

Activating 3CX Phone System

After installation, you must activate your license by going to the **“Settings”** > **“Activate License”** page in the 3CX Management Console.

Activate 3CX Phone System

Activate 3CX Phone System to unlock commercial features

Product details

Product	FREE
Version Number	0
Support	n/a
Maintenance	n/a
Number of Simultaneous Calls	2
Number of G729 Channels	0
3CX Phone System Pro Edition Features	n/a

License key

If you have purchased 3CX support, you should have received an email with a login and password to the 3CX Support Portal. Please contact your reseller for these details.

License key

XXXX-XXXX-XXXX-XXXX

Customer details

Company	3CX Ltd.
Contact Name	Sales Department
E-mail	info@3cx.com
Telephone	+357 22444032
Country	CYPRUS

Reseller Details

Specify from which 3CX reseller you bought this 3CX license

3CX

Free Version

Activate

Cancel

Activating Your License

Enter your license key, Company, Contact Name, E-mail, Telephone, Country and the name of your Reseller (The company who you bought 3CX from) and click on **“Activate”** to activate your license.

- This information will be sent to our license key server and your license key and installation will be activated. A service restart will be required at this point so please keep that in mind when you activate your license.
- Please note that in order to be entitled to your first year of free upgrade insurance your details must be inserted correctly. These details are reviewed at the 3CX HQ and if they are not correct the upgrade insurance will not be activated.

You will need to do this each time you re-install 3CX Phone System on a new machine or when a change in the local network topology or hardware occurs (for example the local MAC address changes).

Note: Packets between the 3CX Phone System server and erp.3cx.com should not be filtered or inspected. If you run DPI (Deep Packet Inspection), license key activations will be rejected.

System Prompts Language

3CX Phone System ships with a US English prompt set by default. Prompts are recorded voice files that are played by the system to callers and users of the system. For example, when a user picks up their voice mail, the system prompts will instruct the user what buttons to press in order to hear or delete voice messages. To change the system prompts to a different language:

1. Go to **“Updates” > “System prompt sets”** node, select the prompt set you wish to use and click on **“Download Selected”**. The prompt set will be downloaded to your machine.
Note: Download only the prompt set that you need.
2. Go to **“Settings” > “System prompts” > “Manage Prompt sets”** at the top of the screen.
3. Select the prompt set that you have downloaded and click on **“Set As Current Prompt Set”**. The system will now use this new prompt set.

Upgrading from a Previous Version of 3CX Phone System

If you are running a previous version of 3CX Phone System (version 3.1, 5, 6.0, 6.1, 7.0, 7.1, 8, 9, 10) you must upgrade to v11 SP 4a, and then to v12 SP 6.1 before following this upgrade procedure.

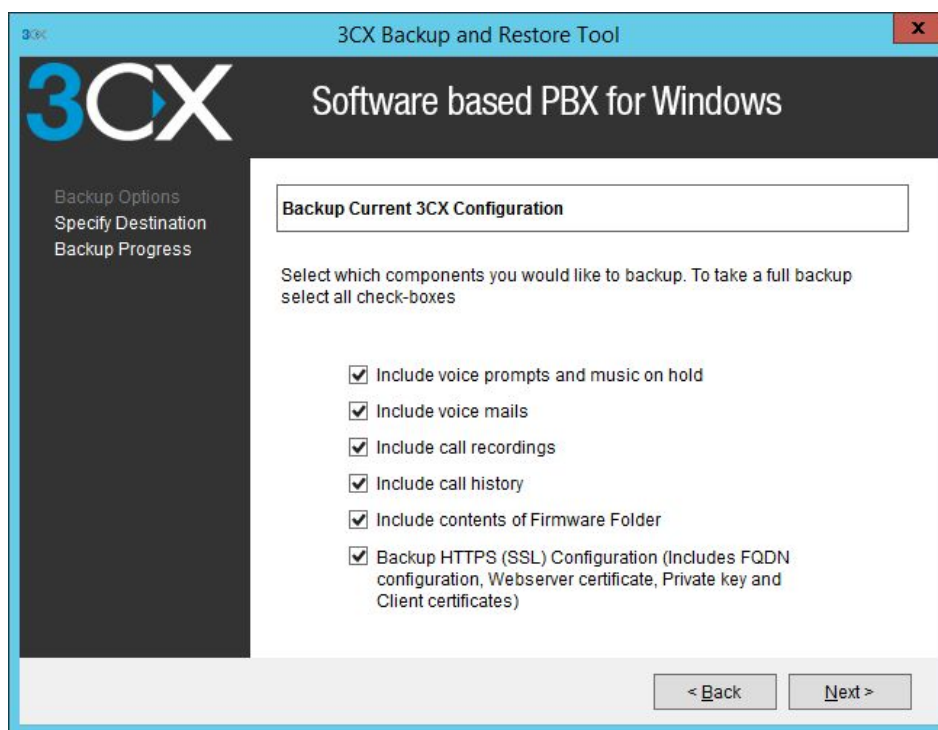
If you are running v12 SP 6.1, you can proceed with the upgrade procedure:

1. Make a backup of your current configuration using the 3CX Backup and restore tool.
2. Uninstall the current version from the **Windows Control Panel > Programs and Features**.
3. Download and install 3CX Phone System Version 12.5.
4. Proceed with the installation and when prompted by the 3CX Wizard, restore your backup.

Backup and Restore

3CX Phone System includes a convenient backup and restore utility that allows you to create a complete backup of your phone system configuration and data to a file.

- To backup your 3CX Phone System data, run the “**3CX Backup and Restore Tool**” located in the 3CX Phone System Start menu Program group: Select “**Backup 3CX Phone System**”.



Backup & Restore Utility

Choose which components you would like to backup. For a full backup select all checkboxes.

Select the path and filename to save the backup to. Click “**Next**”.

The tool will proceed to backup your PBX. A zip file will be created containing your 3CX Phone Systems data, store this file in a safe place.

To restore the phone system data, start the 3CX Backup and Restore utility:

1. Select “**Restore 3CX Phone System backup**”.
2. Locate the backup of the 3CX Phone System, select it and click “**Next**”. The tool will proceed to restore your backup. Note that the current configuration will be **OVERWRITTEN** with the backup data, and any changes that you have made **since performing the backup**

will be lost. You must also close the management console **BEFORE** making a restore.

Scheduling a Backup

Using the Windows scheduler you can easily schedule a daily phone system backup. To do this:

1. Go to **Windows Start Menu** and search for **“Task Scheduler”**.
2. Run the Task Scheduler and click **“Create Basic Task”**.
3. Select when this task will run and click **“Next”**.
4. Select **“Start a program”**, click **“Next”** and browse to the 3CX Backup program. The default path is: “C:\Program Files\3CX PhoneSystem\Bin\3cxbackup.exe”
5. In the **“Add arguments”** entry field, include the command line parameters that you need:
 - Hidden - runs the process hidden so it will close automatically after completion
 - Backup - will backup the database
 - Restore - will restore the database
 - Filepath is the location of the database to restore from or backup to
 - /callhist - will include the call history database
 - /voiceprompts - will include system prompts
 - /voicemails – will include voice mails
 - /callrecordings - will include call recordings.
 - /exit – to exit the utility after backup is done.
 - /firmware – backup the firmwares of the IP Phones also
 - /ssl - backup HTTPS configuration

Example of an argument for a complete hidden backup of 3CX Phone System to path “c:\backup.zip”:

hidden backup c:\backup.zip /callrecordings /voicemails /voiceprompts /callhist /ssl /exit

You can then direct your backup solution, to also include the backup.zip file and store it on your backup media.

Moving 3CX Phone System to a New Machine

Follow this guide on how to [Move 3CX Phone System to a New Machine](#).

Configuring the Clients – 3CXPhone

Introduction

3CXPhone is a SoftPhone that allows users to easily manage their extension with a few mouse clicks – rather than via a cryptic and limited hardware phone interface. 3CXPhone can work alongside an existing supported IP Phone or you can use the inbuilt softphone (3CXPhone).

3CXPhone is available for multiple platforms including Windows, Android, iOS and Mac.



3CXPhone

3CXPhone provides the following functions:

1. **Call Pop-up** – Upon receiving a call, 3CXPhone will allow you to reject the call, transfer the call to another person or to voice mail - with a single mouse click or by using drag and drop.
2. **Easy Call Transfer / Park** – When on a call, you can transfer or park a call with a mouse click or via drag and drop, no need to learn dial codes or call transfer procedures on a phone.
3. **Presence** – The status of other extensions is displayed, allowing you to avoid unnecessary calls or call transfers to colleagues that are busy.
 - 3CXPhone will display different information based on whether you are a standard user or a manager and the customisation of your Group Rights within your extension settings.
 - In the Manager role, you can see calls from anyone in your department. These rights are set by the 3CX Phone System Administrator, from the 3CX Management Console. For additional information about Group Rights, refer to the Extension Management section of this manual.
4. **Click to Call** – Launch calls with a couple of mouse clicks. Click on an extension to bring up the extension options to make a call, leave a voicemail, or chat. The call will be automatically launched without you needing to dial the number. Calls can also be launched directly from your contact management software when using [3CXPlugins](#).
5. **Hotkey Dialling** – Place, answer or control calls with ease, using configurable keyboard shortcuts.
6. **Queue Monitoring** – View the status of queues that you are a member or a manager of.

See callers waiting in queue and be able to pick up a call from the queue.

7. **Text Chat** – Message other users one to one or create multi user chat using the in-built chat options.
8. **Record Calls** – You can record a call or conference call by clicking the record button.
9. **Phonebook** – 3CXPhone provides easy access to the company and personal phonebook's. It allows users to initiate calls by searching for contacts. Double clicking on a contact offers users the option of calling, leaving a voicemail, conferencing and other alternative functions. When the call option is selected, it will automatically resolve the number and launch the call.

Supported Client Operating Systems

3CXPhone v12.5 for Windows

3CXPhone for Windows runs on x86 and x64 hosts as a WOW64 application.

- Windows XP (**Not** Supported)
- Windows 7 (Tested and Supported)
- Windows 8 (Tested and Supported)
- Windows 8.1 (Tested and Supported)

Additional requirements:

- Microsoft .Net 4.0 or 4.5.
- Microsoft Visual C++ 2010 x86 (on both x86 and x64 hosts).

Microsoft Terminal Services

- 2008 / 2008 R2 Server with terminal services installed.
- 2012 / 2012 R2 Server with terminal services installed.

3CXPhone for Windows can run in SIP or CTI mode on Microsoft Terminal Servers and allows multiple runtime instances.

- When in CTI mode it will drive the IP Phone on your desk.
- When in SIP mode audio calls will be routed through the terminal session (RDP) to the endpoint where the default microphone and headset of the client's sound card will be chosen as input and output device accordingly.

However, in order to enable SIP mode on a terminal server, desktop experience must be installed as a role on the terminal server itself and mapped in the remote desktop session, to be sent and recorded from the client system.

Latency during calls made in this environment are dependent on:

- The host's load, the client's computing power.
- The RDP protocol used.
- Available bandwidth to the host itself.

Note: On Terminal Services 3CXPhone can still be paired with 3CX Plugins in order to work with CRM plugins such as Outlook, however the TAPI driver will NOT be installed, as TAPI is designed as a non multi user aware application.

3CXPhone for iOS

3CXPhone for iPhone is optimized for iPhone 6.

- iOS 8
- iPhone 4S, iPhone 5, iPhone 5s, iPhone 6
- iPod touch (3rd generation), iPod touch (4th generation), iPod touch (5th generation)
- iPad & iPad Mini all models

3CXPhone for Android

- Android 2.3 or higher (Android 4.X is recommended)

3CXPhone for MAC OS X

- Mac OS 10.10

Supported Headsets

Please see [Support Page](#) for a list of Supported Handsets and Devices.

Technical background - Softphone or CTI mode

3CXPhone can run in two different modes:

1. **Softphone Mode (All platforms)** – Allows you to make and receive calls on your computer or mobile device without using a deskphone. It uses a built in SIP engine to place the calls and uses the device's microphone and speakers. In softphone mode 3CXPhone can handle up to 5 simultaneous calls and supports blind and attendant transfer.
2. **CTI Mode (3CXPhone for Windows only)** – Allows you to control your hardware IP deskphone from your Windows desktop with a few mouse clicks. When in CTI mode 3CXPhone can handle only one simultaneous call and supports blind and attendant transfer.

CTI

When 3CXPhone is in CTI mode, HTTP commands are send directly to the IP phone that is registered to the extension, to control the functionality of the phone. When in CTI mode you will see the number you are attempting to dial on the IP phone's display and hear the standard ring back tones from your telecommunication provider. CTI mode allows extensive functionality control such as starting, ending, transferring, muting, and holding calls or starting a conference, which then can be managed by using the 3CXPhone client. Full CTI mode at a glance:

1. Call control of Fanvil, Htek, snom and Yealink phones.
2. Initiate calls with a mouse click – no need to retype the phone number.
3. Easy call transfers.
4. Create and manage conference calls with a few mouse clicks.
5. Uses CTI API on the phone to make calls.
6. Click-To-Dial support.

To use CTI Mode, you should make sure that in your **“Extensions”** node **Extension settings > “Forwarding rules” > “Available”** tab, the option **“I want to be able to accept more than one call at the same time”** is **not** enabled.

Note: CTI Mode can not be used in the Out of Office profile. MakeCall will be used for all phone models.

MakeCall

“MakeCall” is used by IP phones that do not support CTI functionality. The most noticeable difference between CTI and “MakeCall” mode is shown when starting a call from call history entries. When you start a call using “MakeCall” the desktop IP Phone will be called from the 3CX Phone System and on the phone's display you will see “MakeCall”. After you pick up the handset the call will be placed on hold and a call to the destination is made from the 3CX Phone System. Once the receiving end answers the call, music on hold will stop and the call will connect to the callee.

Installing 3CXPhone

3CXPhone is installed via the:

- Apple App Store for iOS devices.
- Google Play for Android devices.
- DMG bundle for Mac OS.
- MSI file for Windows.

Depending on the platform you need it for. The installation links are sent in the user's welcome email and the configuration file is attached to it as well.

Windows

[3CXPhone for Windows](#) is available as an MSI file.

First time installation requires administrative rights. As long as the default installation path has been chosen, the provisioning of the 3CXPhone and future updates do not require administrative rights.

- You can deploy the MSI file via active directory automatically.
- You must also deploy the “Microsoft Visual C++ 2010 x86” msi package on x86 and x64 clients.

Once installed and provisioned, 3CXPhone gets updated automatically with the service packs of the 3CX Phone System. For more information see the “Updating 3CXPhone” section of this document.

More information can be found here about the [Windows Client Installation](#).

Android

The [Android Client](#) can be installed via the Google Play Store.

Be sure to configure [Google Push](#) before sending out the welcome emails for Android users.

More information can be found here about the [Android Client Installation](#).

Apple iOS

The [iOS Client](#) can be downloaded from the Apple App store.

The 3CXPhone App requires read only access to the local device (phone) to compose a unified address book of all contacts. Also, in order to receive Push messages it must also be allowed to send “Notifications” to the device.

If you have not granted these access rights during the first 3CXPhone client startup. You can change them by logging onto the iOS device and Enable the functions for the 3CXPhone app.

- For allowing access to contacts, go to “**Settings**” > “**Privacy**” > “**Contacts**” >.
- For notifications, go to “**Settings**” > “**Notifications**”

More information can be found here regarding the [Apple Push](#) Messaging Service.
More information can be found here about the [iOS Client Installation](#)

Mac OS

You can download the latest version of [3CXPhone for Mac](#) available as a DMG file.

To Install on a Mac

- Mount the dmg file to the host and drag the app into the application folder.
- The app itself is signed with an Apple developer account and does not require modification of the security level setting, for installing an untrusted application. However the installation needs to be done by an administrative user.
- Once installed and provisioned, 3CXPhone gets updated automatically with the service packs (starting with 3CX Phone System 12 SP3) of the 3CX Phone System.

For more information see the “Updating 3CXPhone” section of this document.

Deploying 3CXPhone (Configuration)

Important note: If you are going to leverage Push technology for Android devices, the Google Push service must be configured **PRIOR** to sending out the configuration emails. For more information see “**Configuring Google Push**” below. An iOS device can be activated at a later stage for the Push service without needing a new configuration email since no new configuration data needs to be sent to the device.

All 3CXPhone clients support two methods to automatically set up the soft clients in order to work with the 3CX Phone System. It is strongly advised **NOT** to configure the clients manually as typos and misconfigurations will impact the users experience. Support will only be provided to provisioned (auto configured) phones. The two auto provisioning methods are as follows:

- Provision via welcome email attachment
- Provision via PnP provisioning (limited to local network multicast domains)

3CXPhone for Windows, Mac and Android have the ability to reprovision automatically, both internally and externally. By default, Windows, Mac and Android clients will retrieve their configuration file every time they are started.

Provisioning using the welcome email will work across all network topologies and clients. It is the preferred method to connect a 3CXPhone client to the 3CX Phone System.

Note: If you are upgrading to 3CX Phone System v12.5 and have changed your HTTP and HTTPS ports during installation, 3CXPhone clients will be able to place calls but not able to use features such as presence. You can reprovision 3CXPhone for Windows and Android, from the 3CX Management Console if the device is within the local network.

To do this,

Go to the “**Phones**” node, select the 3CXPhone client that you wish to reprovision and click “**Reprovision Phones**”.

- To reprovision 3CXPhones outside your local network, resend the 3CX Welcome email.

Sending the 3CX Welcome Email

In order to auto provision the 3CXPhone client via email, the user must have received the welcome email. This is sent automatically when the extension is created.

Note: For the 3CX Welcome Email to be sent automatically you need to ensure that you have configured your mail server settings in “**Settings**” > “**General**” > “**Mail Server**” tab, making sure that the “**Notify User When Extension is Added**”, checkbox is ticked . The welcome email can also be customised.

If you wish to resend a welcome email:

1. Log in to the 3CX Management Console and go to the “**Extensions**” node.
2. Select the extension you want to provision and click the “Send Welcome Email” Tab
3. An email will be sent to the extension’s email along with an attachment for auto provisioning.

Once the user has installed the client from Google Play, the Apple App Store the MSI file or the dmg file, you can instruct the user to open the welcome email and double click/tap on the attachment. The attachment will start up 3CXPhone on the user’s machine and automatically configure.

The 3CX Push Service

3CXPhone uses Push technology to wake up the smartphone when a call is received. This does not require the user to keep the phone active and the 3CXPhone client turned on to be able to receive calls – the phone can go to sleep to save battery life.

Configuring Google Push

Follow these instructions to configure [Google Push](#).

Configuring Apple Push

Follow these instructions to configure [Apple Push](#).

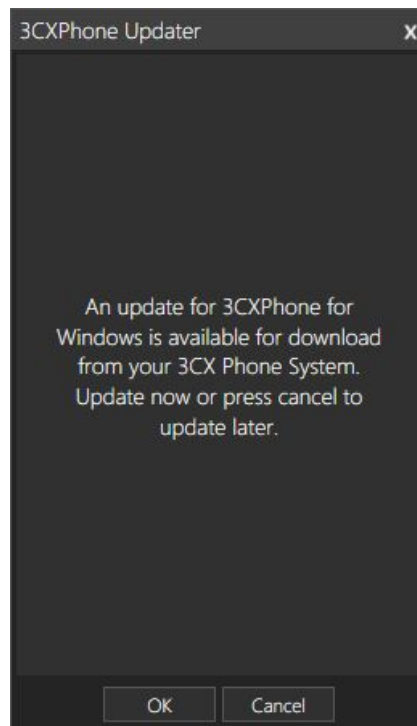
Enabling/Disabling Push

After configuring your Push settings you will need to select which extensions have Push functionality enabled. To do that:

1. Login to the 3CX Management console.
2. Select “**Settings**” > “**3CXPhone**”.
3. Scroll down to the “**Select 3CX Users**” section.
4. Click on the extension that you want to enable Push for, in the left column and click “**Add**”.
5. The extension will be added to the right column and Push will be enabled.
6. If you want to disable Push for an extension just select the extension from the right column and press “**Remove**”.
7. The extension will be transferred to the left column and Push functionality will be disabled.

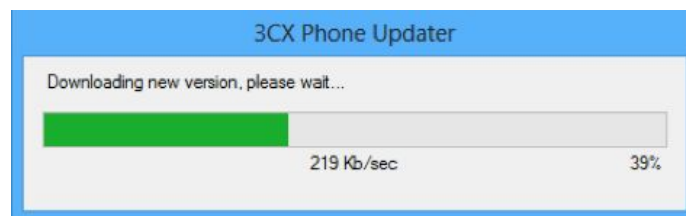
Updating 3CXPhone

Updates to the desktop versions of 3CXPhone are deployed automatically via the 3CX Phone System Server. When a new update is available on the 3CX Website, the 3CX Phone System Server downloads the update for 3CXPhone for Windows and Mac then notifies the 3CXPhone users. If a user has an out-dated 3CXPhone, upon starting 3CXPhone, they will be shown a message informing them that a new version of 3CXPhone is available:



3CXPhone Notifying the User about New Updates

Once the user accepts the update, the downloader will start and download the new installation of 3CXPhone:



3CXPhone Updater Downloading the Latest Version

After the file download is finished, the new client will be installed automatically and 3CXPhone will restart on its own to complete the upgrade.

The Mac OS client downloads the new dmg file and mounts it for the user. The user now needs to drag it to the application folder within the dmg bundle and select “**Replace**”. When this is completed you can re-launch the 3CXPhone applications folder or from the dock.

The Android and iOS clients update automatically through the Google Play store and the Apple App Store (depending if automatic update is activated) when they detect a newer version of the client online.


Using 3CXPhone for Android, iOS and Windows

A [Web-Based User Manual](#) exists for all 3CXPhone platforms.

Managing 3CXPhone

The administrator can review all connected users that are using 3CXPhone from the 3CX Management Console “**Phones**” node. This shows all the users who are currently logged in and using 3CXPhone, including their IP and the client version/type they use. If the extension is not listed in the 3CXPhone Clients tab, the client is not currently connected. The administrator can control






what configuration options are available in 3CXPhone per extension from “**Extensions**” node > “**Edit Extension**” > “**3CXPhone**” tab.

 Edit Extension settings and click OK or Apply to save changes.

General Voice Mail Forwarding Rules Phone Provisioning **3CXPhone** Other Options Office Hours Scheduling Rights

3CXPhone Options

The options below allow your extension to integrate with 3CXPhone

Disallow use of 3CXPhone	<input type="checkbox"/> 
Hide Forwarding Rules	<input type="checkbox"/> 
Show Call Recordings	<input type="checkbox"/> 
Allow Deletion of Recordings	<input type="checkbox"/> 
Configure default phone to use in 3CXPhone for Windows	<input type="checkbox"/> IP Phone via CTI
Default Startup Screen	Dial Pad
Use 3CX Tunnel for remote connections (3CXPhone only)	<input type="checkbox"/> 

From here you can configure:

- **Disallow use of 3CXPhone**- Removes the users ability to use a 3CXPhone
- **Hide the Forwarding Rules** - Removes the users ability to configure his/her forwarding rules from within the 3CXPhone client. These options will only be available from the 3CX Management Console.
- **Show Call Recordings / Allow Deletion of Recordings** - Adds the call recordings, allowing the user to manage their call recordings.
- **Configure default phone mode to use in the 3CXPhone for Windows** - Configure which phone mode (Softphone or CTI) must be used by default.
- **Default Startup Screen** - Sets the default appearance of the phone to the dial pad or the presence screen.
- **Use 3CX Tunnel for remote connections** - Configures 3CXPhone to use the 3CX Tunnel for the “Out of Office” connection to the 3CX Phone system rather than connecting directly via STUN/SIP port of the pbx. It is advised to turn this option **ON** to avoid intermittent connection problems (absence of audio) from remote locations to the phone system.

Note: 3CX Phone System includes an automatic callback feature in Blind Transfer. If you perform a blind transfer and the recipient of the call is busy, then the call will automatically return back to you. This way you can inform the caller that the person they are trying to contact is busy and proceed to transfer to another destination. Read our detailed guide on how to [How to Enable Callback on Unsuccessful Blind Transfer](#)

Configuring 3CXPhone as a remote extension

Prerequisites for having remote extensions are explained in detail in the “**Configuring Remote Extensions**” section in the “**Configuring & Managing IP Phones**” chapter.

3CXPhone for Windows, Mac, Android

3CXPhone for Android, Windows and Mac are automatically configured to be able to be used as remote extensions using the 3CX Tunnel or in direct STUN mode depending on the setting of the extension. No configuration at all is required on the client side.

As soon as the user switches network, and 3CXPhone detects this change, it automatically

reconfigures itself to the appropriate state and restores the connection to 3CX Phone System. The same technology is used when the 3CXPhone is launched from a “terminated” state.

Note for Android users to save battery: If the user presses the “**Home**” button, 3CXPhone remains running in the background. This will consume more battery because a Wi-Fi or mobile data network connection must be kept alive. To avoid this, close the application by using the method used by your phone to close running applications. 3CX Phone System will then wake up 3CXPhone using the 3CX Push service.

Configuring 3CXPhone for iPhone

3CXPhone for iPhone is also automatically configured to be used as a remote extension. No configuration at all is required. Just like Android, as soon as the user changes a network and 3CXPhone detects that it is not on the same network as 3CX Phone System, 3CXPhone for iPhone will switch to Out of Office mode and configure itself as a remote extension and re-register “on the fly”.

In most cases 3CXPhone for iPhone will connect without problems. However, if there are issues, then you must:

1. [Download 3CX VoIP Tunnel](#) from the Apple App Store.
2. Launch the 3CX Tunnel app.
3. In the “**Remote Tunnel IP**” field enter the public IP of the 3CX PBX.
4. Insert the tunnel port (usually 5090) in the “**Remote Tunnel Port**” field.
5. Enter the “**Remote Tunnel Password**” (as configured by the administrator on 3CX Phone System).
6. Click “**Start**”.
7. Switch back to 3CXPhone for iOS and go to “**Settings**” > “**Accounts**” > Select the appropriate account > Scroll down and set “**Use 3CXTunnel**” to “**ON**”.
8. Place your call.

Note: According to Apple iOS app standards, every time you press the home screen button, and the application goes to the background, 3CXPhone for iPhone will go into background mode and must unregister. 3CX Tunnel will go in the background as well and will remain active for 10 minutes. After 10 minutes, 3CX Tunnel will be terminated by iOS. This is an iOS standard procedure to preserve battery life. For this reason the 3CX Tunnel app should only be used when experiencing issues placing outbound calls. When your call is done, 3CX Tunnel should be turned off, as to not interfere with 3CX Push notifications.

To place a call using 3CX Tunnel:

1. Launch the 3CX Tunnel app, and confirm that it is started and connected. If the status is “**Stopped**” click on “**Start**” and wait until the status changes to “**Connected**”.
2. Launch 3CXPhone and after a successful registration, proceed and make your call.

Configuring & Managing IP Phones

Introduction

Once 3CX Phone System is installed, you can configure your IP phones and assign extensions to each phone. 3CX can automatically configure your IP phones.

Supported IP Phones that require manual provisioning:

- **Cisco 7940/ 7941/ 7960 /7961**
- **Cisco SPA 501G, 502G, 504G, 508G, 509G, 525G**
- **Polycom SoundPoint 320, 330**
- **Polycom SoundPoint 321, 331, 335, 450, 550, 560, 650, 670**
- **Polycom SoundStation 5000, 6000, 7000**
- **Panasonic KX-TGP500B01 (DECT)**
- **Cortelco C58/C58P, C62/C62P**
- **Alphatech Doorphone**

Global Provisioning Settings

Before provisioning an IP Phone, confirm that the default parameters are correct, for your timezone, in the **“Settings” > “Phone Provisioning” > “General”** tab.

The screenshot shows the 'Phone Provisioning' configuration page with the 'General' tab selected. It includes fields for External/Public and Internal/Local Provisioning URLs, and a section for Time Settings with various time zone dropdowns.

Phone Provisioning	
General Templates IP Phone Firmware	
Phone Provisioning URL The below is the URL which will be used for IP Phone Provisioning. To configure this an FQDN is required. You can configure an FQDN for the system from Network > FQDN Tab.	
External/Public Provisioning URL is	<input type="text" value="http://contoso.com/provisioning/9bb4265oij"/>
Internal/Local Provisioning URL is	<input type="text" value="http://10.172.0.20/provisioning/9bb4265oij"/>
Time Settings	
Configure the time zone	
Time Server	<input type="text" value="pool.ntp.org"/> ⓘ
Time Zone for Snom Phones	-8 United States - Pacific Time ⓘ
Time Zone for Yealink Phones	GMT-8:00 United States-Pacific Time ⓘ
Time Zone for Fanvil Phones	GMT-8:00 Mexico(Tijuana,Mexicali) ⓘ
Time Zone for Cisco SPA Phones	GMT-8:00 (US Pacific Time, Los Angeles) ⓘ
Time Zone for Cisco 7940/7960 Phones	GMT-8:00 (US Pacific Time, Los Angeles) ⓘ
Time Zone for Cisco 7941/7961 Phones	GMT-8:00 (US Pacific Time, Los Angeles) ⓘ
Time Zone for Polycom Phones	GMT-8:00 (US Pacific Time, Los Angeles) ⓘ

Phone Provisioning

Provisioning Network Configuration

Make sure that the internal FQDN resolves to the correct IP address. To provision remote extensions, the external FQDN should be specified. To do this go to **“Settings” > “Network” > “FQDN”** tab.

Time Zone

3CX will automatically provision the timezone to the phones. Each phone can be configured to a different time zone from the **“Extension”** node > **“Edit Extensions” > “Phone Provisioning” > “Time Zone”** drop-down menu. The Time Zone in the Extension tab will take precedence over the Global Time Settings in the **“Settings” > “Phone Provisioning”** section.

Daylight Saving Time

Fanvil, Htek, snom and Yealink phones will apply the DST changes based on the time zone / country selected. For Cisco and Polycom IP phones the DST date and the offset needs to be configured manually depending on the country. This configuration needs to be reviewed each year so that any changes can be kept upto date.

Company Phonebook

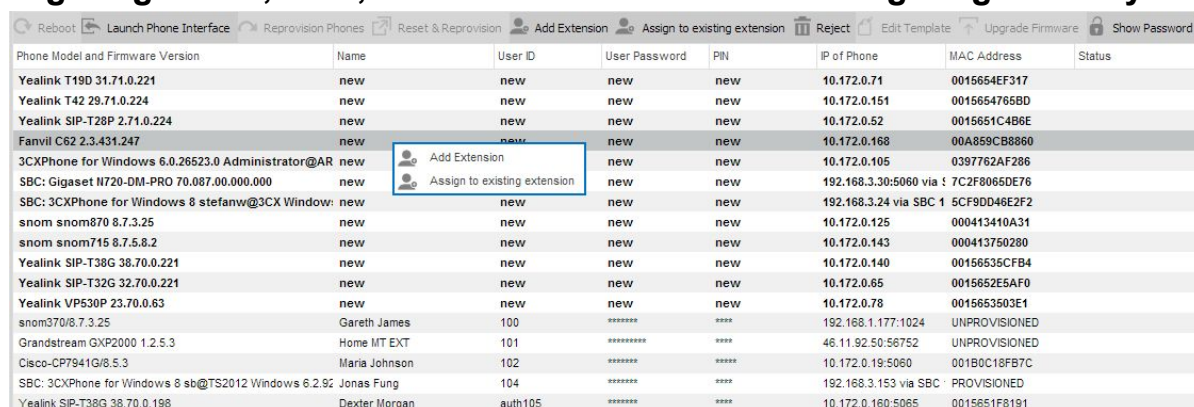
Your companies phonebook can be sorted alphabetically by last name or first name. It is pushed to the IP phones when a phone starts up. Some phones may require a reboot to reload the phonebook again.

Personal Provisioning Settings

Beside the global provisioning settings, the phone will also retrieve individual configuration information such as:

- Extension Number, Name and Password.
- BLF Keys ([Busy Lamp Field](#)) used to display the call state of another extension.
- IP Phone Web-Interface password.
- Language Display.
- Codecs Preference Order.

Configuring Fanvil, Htek, snom and Yealink Phones using Plug and Play



Phone Model and Firmware Version	Name	User ID	User Password	PIN	IP of Phone	MAC Address	Status
Yealink T190 31.71.0.221	new	new	new	new	10.172.0.71	0015654EF317	
Yealink T42 29.71.0.224	new	new	new	new	10.172.0.151	0015654765BD	
Yealink SIP-T28P 2.71.0.224	new	new	new	new	10.172.0.52	0015651C4B6E	
Fanvil C62 2.3.431.247	new	new	new	new	10.172.0.168	00A859CB8860	
3CXPhone for Windows 6.0.26523.0 Administrator@AR	new	new	new	new	10.172.0.105	0397762AF286	
SBC: Gigaset N720-DM-PRO 70.087.00.000.000	new	new	new	new	192.168.3.30:5060 via 1	7C2F8065DE76	
SBC: 3CXPhone for Windows 8 stefanvw@3CX Window	new	new	new	new	192.168.3.24 via SBC 1	5CF9DD46E2F2	
snom snom870 8.7.3.25	new	new	new	new	10.172.0.125	000413410A31	
snom snom715 8.7.5.8.2	new	new	new	new	10.172.0.143	000413750280	
Yealink SIP-T38G 38.70.0.221	new	new	new	new	10.172.0.140	00156535CFB4	
Yealink SIP-T32G 32.70.0.221	new	new	new	new	10.172.0.65	0015652E5AF0	
Yealink VP530P 23.70.0.63	new	new	new	new	10.172.0.78	0015653503E1	
snom370/8.7.3.25	Gareth James	100	*****	****	192.168.1.177:1024		UNPROVISIONED
Grandstream GXP2000 1.2.5.3	Home IMT EXT	101	*****	****	46.11.92.50:56752		UNPROVISIONED
Cisco-CP7941G/8.5.3	Maria Johnson	102	*****	*****	10.172.0.19:5060	001B0C18FB7C	
SBC: 3CXPhone for Windows 8 sb@TS2012 Windows 6.2.92	Jonas Fung	104	*****	*****	192.168.3.153 via SBC		PROVISIONED
Yealink SIP-T38G 38.70.0.198	Dexter Morgan	auth105	*****	****	10.172.0.160:5065	0015651F8191	

Plug and Play Phone Provisioning

Auto Provisioning phones using Plug and Play:

1. Connect the IP Phone to the LAN. Ensure that the phone is on the same LAN (Multicast Domain) as 3CX Phone System.
2. The phone will show up in the “**Phones**” node of the management console as a new phone.
3. Right-click on the phone’s entry and assign it to an existing extension or create a new one for it.
4. You will then be taken to the extension’s provisioning tab where you can specify other configuration settings on the phone.
5. The phone will be sent a link to the configuration file with the settings you specified. The phone will then restart, apply the settings and connect to 3CX Phone System. Some phones will ask for confirmation before restarting.

Changes made to the phone configuration from the “**General**” tab of the “**Extensions**” node or within the “**Phone Provisioning**” section of the “**Settings**” node, will take effect within 24 hours. You can reprovision the phones to force them to pick up the new configuration immediately.

To do so:

1. From the “**Phones**” node, in the management console, select the phones to which you want to apply the changes to immediately . You can select multiple phones at once by holding the Ctrl the Shift keys.
2. Click the “**Reprovision Phones**” button.
3. The phones will restart and apply the desired changes.

Provisioning Cisco, Polycom Phones

Cisco and Polycom phones do not support plug and play and must be provisioned using the following method.

Step 1 – Configuring the Extensions for Provisioning

Edit Extension settings and click OK or Apply to save changes.

General Voice Mail Forwarding Rules **Phone Provisioning** 3CXPhone Other Options Office Hours Scheduling Rights

Htek UC860 New phone device...

Provisioning

Provisioning ensures the phone settings are centrally retrieved, this limits the amount of time spent and information needed to be configured on each phone.

MAC Address	002584D80FC4	i
Model	Htek UC860	i
Phone Web Page Password	*****	i ***
Phone Display Language	English	i
Time Zone	Use global PBX settings	i GMT+2:00 Estonia(Tallinn)
Select Provisioning Method	Local Lan (In the Office)	i
Select Interface	10.172.0.221	i

Codec Priority

Configure the priority of the codecs in this phone

Preferred Codec	PCMU	i
Second Preferred Codec	PCMA	i
Third Preferred Codec	G722	i
Fourth Preferred Codec	G729A/B	i

BLF (Busy Lamp Fields)

You can map one or more BLF (Busy Lamp Fields) of your phone to particular extensions in order for the user of this phone to see the status of those extensions on his phone. i

Type	Action	Type	Action
1 BLF	265 Delphine Walker	6 Change Status	Available
2 BLF	176 Bobby Robinson	7 Change Status	Away
3 BLF	286 Saquientia Ellis	8 Change Status	Out of Office
4 Agent Login/Logout	Log in to Queue	9	
5 Agent Login/Logout	Log out of Queue	10	

Add more BLF's More BLF's

OK Cancel Apply

Provisioning a Phone

1. From the “**Extensions**” node, in the Management Console, select the extension you want to provision, click “**Edit Extension**” > “**Phone Provisioning**” tab.
2. Enter the MAC address of the phone (which can be found at the bottom of the phone) in the MAC address field.
3. Select the appropriate phone model from the drop down menu of the **Model** list.
4. Phone Web Page Password – This is auto generated by the 3CX Phone System and is applied to your phone upon provisioning. If you want to log in to your IP Phone's Web Interface then use the value in the “Password field” on the Web Interface login screen (Username is not changed in the Phone's Web Interface it remains to its default value - admin- even after provisioning). You may leave the Web Page Password as is or specify your own.
5. Confirm the IP address which the phone should connect to (in case your phone system server has multiple network interfaces).

- The codecs and codec priority will be automatically configured depending on the phone model selected.
- If your phone has BLF lights, you can automatically configure what information the BLF lights should display. Match a BLF button with an extension, so that this button will show the status of that extension. The number of available BLF buttons varies per phone.
- You can also link a shared parking place to a BLF button. This allows users to easily park or unpark calls by clicking the assigned BLF button. Speed dials and custom speed dials are also supported.
- Click **“OK”** to save. The provisioning files will now be created in the provisioning directory. Each time you make a change to the extension, these files will be re-created.

Step 2 – Configure the Phone to Retrieve the Configuration File

Now you need to instruct the phone to download its configuration from the provisioning directory on the 3CX Phone System server. This is done in one of two ways:

- Via the Phone's Web Interface - Enter the provisioning URL via the phone's web configuration. This is a one-time operation. (Recommended for smaller networks)
- Using Option 66 in your DHCP Server - With this option, the phone will obtain the URL when it boots up and receives its IP from the DHCP server. This is recommended for larger networks as it makes it easy to change the provisioning URL later. To use this option, you need to configure your DHCP server accordingly see our guide on [How to Auto-Provision IP Phones with the DHCP “Option 66”](#)

Determining the Provisioning URL to specify

The exact URL needed will depend on the model of the phone you are using. Follow the guides provided in the [Supported IP Phones](#) page, for your phone model.

Managing Your IP Phones

Reboot Launch Phone Interface Reprovision Phones Reset & Reprovision Add Extension Assign to existing extension Reject Edit Template Upgrade Firmware Show Password							
Phone Model and Firmware Version	Name	User ID	User Password	PIN	IP of Phone	MAC Address	Status
Yealink T190 31.71.0.221	new	new	new	new	10.172.0.71	0015654EF317	
Yealink T42 29.71.0.224	new	new	new	new	10.172.0.151	0015654765BD	
Yealink SIP-T28P 2.71.0.224	new	new	new	new	10.172.0.52	0015651C4B6E	
Fanvil C62 2.3.431.247	new	new	new	new	10.172.0.168	00A859CB8860	
3CXPhone for Windows 6.0.26523.0 Administrator@AR	new	new	new	new	10.172.0.105	0397762AF286	
SBC: Gigaset N720-DM-PRO 70.087.00.000.000	new	new	new	new	192.168.3.30:5060 via SBC	7C2F8066DE76	
SBC: 3CXPhone for Windows 8 stefanw@3CX Window	new	new	new	new	192.168.3.24 via SBC	1 5CF9DD46E2F2	
snom snom870 8.7.3.25	new	new	new	new	10.172.0.125	000413410A31	
snom snom715 8.7.5.8.2	new	new	new	new	10.172.0.143	000413750280	
Yealink SIP-T38G 38.70.0.221	new	new	new	new	10.172.0.140	00156535CFB4	
Yealink SIP-T32G 32.70.0.221	new	new	new	new	10.172.0.65	0015652E5AF0	
Yealink VP530P 23.70.0.63	new	new	new	new	10.172.0.78	0015653503E1	
snom370/8.7.3.25	Gareth James	100	*****	****	192.168.1.177:1024	UNPROVISIONED	
Grandstream GXP2000 1.2.5.3	Home MT EXT	101	*****	****	46.11.92.50:56752	UNPROVISIONED	
Cisco-CP7941G/8.5.3	Maria Johnson	102	*****	****	10.172.0.19:5060	001B0C18FB7C	
SBC: 3CXPhone for Windows 8 sb@TS2012 Windows 6.2.92	Jonas Fung	104	*****	****	192.168.3.153 via SBC	0050569652D4	
Yealink SIP-T38G 38.70.0.198	Dexter Morgan	auth105	*****	****	10.172.0.160:5065	0015651F8191	
PolycomSoundPointIP-SPIP_320-UA/3.4.0085	Emily White	106	*****	****	10.172.0.106:5060	0004F214B038	
Cisco-CP7961G/8.5.3	Ricky Dellinger	107	*****	****	192.168.3.72:5060	001B53B9067E	

The Phones Node

3CX Phone System provides an easy way to monitor and manage your phone's throughout your network. The **“Phones”** node in the 3CX Management console allows you to:

- View all phones in the network.
- Quickly view IP and Mac address of each phone.
- Check the firmware version that the phone is running.
- Remotely reboot one or all of the phones.

- Re-provision the phones (after you have made a change you can reboot the phones for changes take effect immediately).
- Launch the admin interface of the phone.
- **Monitor security of extension password and PIN.** Weak extension passwords and PIN's are the most common cause of security breaches.

Re-Provisioning the Phones

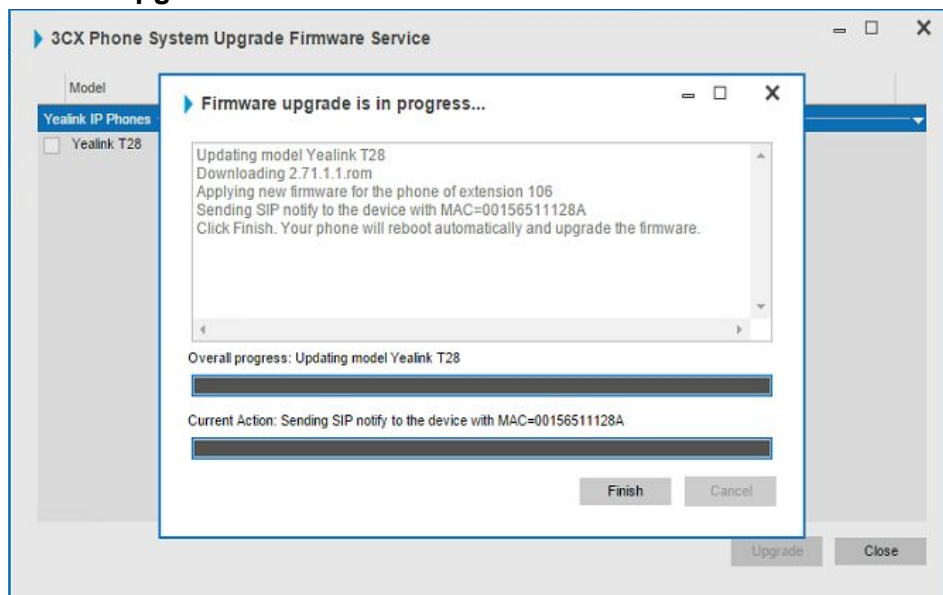
If you need to re-provision the phones, for example after you have made configuration changes.

1. Select the **“Phones”** node in the management console.
2. Select the phones that you wish to reprovise.
3. Click **“Reprovision phones”**.
4. Select the phones again and select **“Reboot”** to restart the phones and activate the new provisioning information.

Updating the Firmware on Your Phones

It is possible to update the firmware of your Cisco, Fanvil, Htek, snom, and Yealink IP phones throughout your network, from the 3CX Management Console. Each of the firmware has been interop tested by 3CX. It is recommended that you upgrade firmware using this method and not by downloading the firmware directly from the vendor's websites. To upgrade your IP Phones to the latest 3CX tested firmware:

1. From the **“Phones”** node, select the IP Phones which you wish to upgrade the firmware on and click the **“Upgrade Firmware”** button.



2. Select the model and firmware of the phone from the upgrade list and click **“Upgrade”**. The firmware will be uploaded and the phone rebooted. Note this feature requires a valid maintenance agreement.

Other IP endpoint devices

3CX supports various for endpoints such as DECT phones, door phones, conference phones and IP cameras. The full range of supported hardware is provided in the [Supported IP Phones Page](#).

Configuring Remote Extensions

A powerful benefit of 3CX Phone System is the ability to support remote extensions, i.e. employees using their extension from home or on the go. This gives tremendous flexibility to employees and delivers true mobility, because employees working from home or away can still be seamlessly

integrated with the head office phone system. They can be a member of call queues and use 3CX Phone to see presence of other users. There are two ways to configure a remote extension:

- Directly, using standard UDP
- Using 3CX Tunnel via the 3CX SBC (Session border Controller)

A direct remote extension is generally used when just a few phones are used in the remote location. If you have more than 2/3 remote extensions, you can use the 3CX SBC.

Configuring Remote Extensions Using 3CX Session Border Controller

Configure IP Phones as Remote Extensions using [3CX Tunnel / 3CX Session Border Controller](#).

Configuring Remote Extensions Using Direct SIP

To provision an IP Phone to be used as a remote extension:

Edit Extension settings and click OK or Apply to save changes.

General Voice Mail Forwarding Rules **Phone Provisioning** 3CXPhone Other Options Office Hours Scheduling Rights

Htek UC860 New phone device...

Provisioning

Provisioning ensures the phone settings are centrally retrieved, this limits the amount of time spent and information needed to be configured on each phone.

MAC Address	002584D80FC4	i
Model	Htek UC860	i
Phone Web Page Password	*****	i ***
Phone Display Language	English	i
Time Zone	Use global PBX settings	i GMT+2:00 Estonia(Tallinn)
Select Provisioning Method	Local Lan (In the Office)	i
Select Interface	Local Lan (In the Office)	i
	Remote Extension (STUN)	
	3CX Session Border Controller	

Provision a Remote Extension

While the phone that you will be using remotely is still on the same LAN as 3CX Phone System.

1. Select **"Extensions"** node, in the Management Console, click on the extension you want to provision, select **"Edit Extension"** > **"Phone Provisioning"** tab.
2. In the **"Select Provisioning Method"** drop-down menu, select **"Remote Extension (STUN)"**.
3. For Information on Port forwarding for UDP port 5060 and UDP ports 9000 – 9099 see our guide on your [Firewall & Router Configuration](#).

Also see our guide on [Provisioning a Remote Extensions](#) for a more detailed explanation of the subject.

Configuring Multiple IP Phones on the same Extension

It is also possible [Configure Multiple IP Phones for a Single Extension](#).

Extension Management

Introduction

This chapter explains how to create and configure extensions in 3CX Phone System. There are multiple ways to create an extension:

- When provisioning a new phone, you can choose to create a new extension.
- Extensions can be manually created from the “**Extensions**” node in the management console.
- Extensions can be imported from Active Directory (or any other LDAP server) or a CSV file.

Extension Configuration

Edit Extension settings and click OK or Apply to save changes.

General Voice Mail Forwarding Rules Phone Provisioning 3CXPhone Other Options Office Hours Scheduling Rights

User Information

Configure user information below

Extension Number	106	i
First Name	Emily	i
Last Name	White	i
Email address	ew@3cx.com	i
Mobile Number	0035722444032	i

Authentication

The authentication ID and Password are used by the phone to authenticate with 3CX Phone System. If the phone has a user id field enter the extension number.

ID	106	i
Password	*****	i

Extension Configuration

To configure an extension, click on the “**Extensions**” node in the 3CX Management Console. Click on “**Add Extension**” to create a new one or select an existing extension and click “**Edit Extension**”.

General

In the User Information section you can enter the first name, last name and the email address of the user. A welcome email with information on the extension created, as well as voice mail and missed call notifications (configurable), will be sent to the specified email address. In the Authentication section, the authentication ID and password are auto generated, however they can be altered as needed. If the phone is provisioned, the authentication details will be sent to the phone automatically.

Voicemail

Manage greetings

WAV files in user's folder

new greeting.wav

+ Add new

Record from phone

Refresh WAV files

Delete

Play on phone

Play

☐ Play this greeting for all profiles

Available greeting

Away greeting

Out Of Office greeting

Roaming greeting

Business Trip greeting

new greeting.wav

Play Default

Play Default

Play Default

Play Default

Play Default

Extension Settings - Voicemail Tab

The **“Voice Mail”** tab allows you to configure the extension’s voice mail preferences including the voicemail PIN number for authentication, enable/disable PIN Authentication, play Caller ID, and if you want 3CX Phone System to read out the Caller ID and the Date / Time of when the message was received. You can also choose to send an email notification, when voicemail is received. This can be configured to contain the voicemail message, and also delete the message from the server freeing up space.

The **“Manage greetings”** section allows you to configure your Voicemail greetings. The following options are available:

- **Add new** – Allows you to add a new greeting from a pre-recorded .wav file.
- **Record from phone** – Lets you record a new greeting file from your phone and add it to the greetings list on the left.
- **Delete** – Deletes the selected greeting file from the greeting list on the left.
- **Refresh WAV files** – Refreshes the list of greeting files in the user’s folder.
- **Play on phone** – Allows playback of the selected greeting file on a configured IP phone.
- **Play** - Allows you to download the selected greeting file to your computer and listen to it.
- You can also choose whether to play the same greeting file for all your statuses or configure different greeting messages for each status.

Forwarding Rules

Each extension can have a set of call forwarding rules that define what 3CX Phone System should do when the extension user is unable to take an incoming call. This can be configured based on the

- The user’s status.
- The time.
- The caller ID.
- Whether the call is an internal or external call.

Each status requires a call forwarding rule. For example, if the user is unable to take a call whilst their status is **“Available”**, you can forward the call to voicemail, whilst if the status is set to **“Out of Office”** you could forward it to their mobile.

Call forwarding can be configured by the administrator using the 3CX Management Console or by the user from the 3CXPhone client. Instructions on how to configure call forwarding for an extension can be found on the [Configuring Forwarding Rules](#) user manual page.

Other

User Information

The user information section allows you to set status, log in and out of queues, turn DND on or off, configure the caller ID for the extension and the SIP ID.

Extension Capabilities

The extension capabilities section allows you to set advanced options for a particular IP Phone registered to this extension. These options are best left as default.

Options

The options tab allows you to configure options, restrictions and access for the extension.

The screenshot shows the 'Options' tab in the 3CX Management Console. At the top, a message says 'Edit Extension settings and click OK or Apply to save changes.' Below this is a navigation bar with tabs: General, Voice Mail, Forwarding Rules, Phone Provisioning, 3CXPhone, Other, Options (selected), Office Hours Scheduling, and Rights. The main content area is divided into three sections: Options, Restrictions, and Access. The 'Options' section has four checkboxes: 'Record all calls', 'Call screening ON', 'Send email notification on missed call', and 'Do not show extension in 3CX company phonebook'. The 'Restrictions' section has five checkboxes: 'Disable Extension', 'Disable External Calls', 'PIN Protect' (with a 'For' field set to '60' seconds), 'Disallow use of extension outside the LAN', and 'Block Remote Tunnel Connections'. The 'Access' section has seven checkboxes: 'Allow 3CX Management Console Access', 'Allow 3CX Web Reports Access', 'Allow Admin Operations', 'Can download any recording', 'Allow 3CX Wallboard Access', 'Allow 3CX Hotel Module Access', and 'Access Password for 3CX Web Services'. A 'Configure Permissions' button is next to the first checkbox. At the bottom right are 'OK', 'Cancel', and 'Apply' buttons.

“Options” tab

Option Settings

- **Record all calls** – Records all calls for this extension.
- **Call Screening On** – Use ONLY for the Rebound feature. Will prompt the user for a name and play the name to the called party so that the person may decide to take the call or not.
- **Send email notification for missed calls** – Triggers an email for each missed call.
- **Do not show extension in 3CX company phonebook** – Removes extension from the phonebook.

Restrictions

- **Disable Extension** – Disables extension.
- **Disable External Calls** – Disallows any external calls from the extension.
- **Pin Protect** - You can configure an extension to allow outbound calls only after they enter a

PIN. To unlock the extension, the user dials 777 followed by the PIN and a #. The PBX will inform the user that access has been granted. The user can then proceed to dial the desired external number.

- **Disallow use of extension outside the LAN** – Blocks any registrations from outside of the network. This setting applies to IP Phones.
- **Block remote tunnel connections** – Blocks the extension from being registered outside of the network, even if it uses the tunnel feature (which is seen as a local registration).

Access

This section allows you to control access to the 3CX Management Console, 3CX Web Reports, 3CX Wallboard and 3CX Hotel Module to a user/extension:

- For more information on delegating 3CX Management Console access, along with use case examples read our [Delegating 3CX Management Console Access](#) chapter.
- Detailed information on 3CX Web Reports is provided in the [Call Reporting](#) chapter.
- 3CX Wallboard is an HTML5 utility that can display live call center statistics. To learn how to use, and customise it see our guide on [WallBoard Configuration](#).
- The 3CX Hotel Module adds additional functions to 3CX Phone System to allow it to be used in hotels or other hospitality environments. For additional information visit our page on [Hotel phone systems](#).

Office Hours Scheduling

The Office hours Scheduling feature allows a user's status to be changed based on global office hours or specific office hours.

The screenshot shows the 'Office Hours Scheduling' tab in the 3CX management console. At the top, a message says 'Edit Extension settings and click OK or Apply to save changes.' Below this is a navigation bar with tabs: General, Voice Mail, Forwarding Rules, Phone Provisioning, 3CXPhone, Other, Options, Office Hours Scheduling (selected), and Rights. The main content area is divided into two sections. The first section, 'Configure Hours', states 'These settings will be applied for ALL Profiles for this particular extension.' It contains two radio buttons: 'This extension uses Global Office Hours' (selected) and 'This extension uses Specific Office Hours'. To the right of the second radio button is a 'Configure' button. Below these is a 'Configure Break Times' label and another 'Configure' button with an information icon. The second section, 'Automatic Extension Scheduling', states 'These options will automatically change the status and functionality of your extension based on the time of the day.' It contains three checkboxes, all of which are unchecked: 'Automatically change extension profile based on time of day', 'Log out from queues when not available (Away / Out of office)', and 'Block Outbound calls outside of Office Hours'. Each checkbox has an information icon to its right.

Office Hours Scheduling tab

Configure Hours

In this section you can select if the extension will follow the PBX's Global Office Hours, or use its own Specific Office Hours. To specify Specific Office Hours, enable the option and click "**Configure**". You can also configure Break Times by clicking "**Configure**" next to the option. These options can be used in conjunction with the options available below to automatically change the status of the extension.

Automatic Extension Scheduling

When you have Configured Office hours and Break times, you can enable the following options to

control automatic status changes and extension functionality based on the time of day:

- **Automatically change extension profile based on time of day** – Outside of Office hours, the user's status will automatically be switched to **"Out Of Office"**. The user's status can also be changed to **"Away"** on configured break times.
- **Log out from queues when not available (Away / Out of Office)** – This option will automatically log the user out from queues when he switches to **"Out of Office"** or **"Away"** status.
- **Block Outbound calls outside of Office Hours** – Blocks any outbound calls from this extension outside of office hours.

Extension Rights

Extension Rights

Configure the group membership, role of user in each group and assigned rights of users in that group.

Extension	Role
<input checked="" type="checkbox"/> 3CX Development	Manager
<input checked="" type="checkbox"/> 3CX ER2	Manager
<input type="checkbox"/> 3CX ER4	
<input type="checkbox"/> 3CX Sales	
<input type="checkbox"/> 3CX ER3	
<input checked="" type="checkbox"/> DEFAULT	User
<input type="checkbox"/> CEO	
<input type="checkbox"/> Root	
<input type="checkbox"/> TESTINGDEPT	

Role of user in this group

Role of user in this group: Manager

Rights currently assigned

Can see group members	<input checked="" type="checkbox"/>	
Can see group calls	<input checked="" type="checkbox"/>	
Show presence to group members	<input checked="" type="checkbox"/>	
Show calls to group members	<input checked="" type="checkbox"/>	
Perform operations (divert, transfer, take) on any active call to group members	<input checked="" type="checkbox"/>	
Can Barge In (Barge, Listen or Whisper) (Requires 3CX PRO Edition)	<input checked="" type="checkbox"/>	
Can Intercom	<input checked="" type="checkbox"/>	
Allow parking	<input checked="" type="checkbox"/>	
Allow IVR control	<input checked="" type="checkbox"/>	
Allows to manage Company Phonebook	<input checked="" type="checkbox"/>	

Reset to Default

Extension Rights

The **"Rights"** tab allows you to quickly check an extensions Group membership rights for this extension and configure them according to your preferences. All the available groups appear on the **"Group Membership"** list on your left.

Any group that the extension already belongs to, is checked, the role of the current extension in the group appears in the Role column. The user's rights for the selected group are displayed on the right side of the tab.

You can modify the extension's rights for that group by ticking off the options in the **"Rights currently assigned"** section of the tab or even change the extension's role by clicking on the **"User Rights"** and selecting **"User"** or **"Manager"** from the drop down menu.

To add an extension to a group simply tick the checkbox next to the group name that you want the extension to be a part of and select the user rights on the **"User Rights"** section of the tab. Click **"OK"** to apply your changes.

Extension Groups

Extension groups are used to determine what information is shown to whom. In addition they help

group the extension for both users and administrators. Note that an extension has to be part of at least one group.

Default Group

The Default group contains all extensions, whereby users of the group have no rights, but managers of this group can see information about all the extensions. Any extension you create will automatically be assigned to this group initially (until you remove it or assign it to another group).

Note: The V11 management group has now been rendered obsolete and is replaced by the ‘Default’ group. “**Management Group rights**” is now “**Default Group Rights**” in the **Default Group**. If you are restoring a backup from V11 to V12.5 then all the users will be added as users to the **Default group** and any managers in the **management group** will be added as **managers** in the **Default group**.

The Default Group is a group that is always present in 3CX Phone System. Managers assigned to this group can:

- See the call details of ALL extensions and queues (since all extensions are part of the default group unless you remove them from the group)
- Perform operations on ANY call in the system (Pickup, Transfer, Divert, Reject, Barge-in, and Park).

To add an extension to the Default group:

1. Click on the “**Default**” sub-node under the “**Extensions**” node.
2. Select an extension on the left and click “**Add**”. Click “**OK**” to save changes.
3. Now logout and login with this extensions 3CXPhone to see the additional information.

Group Rights Logic

Users can be assigned rights to see details of other members in their group, managers can be assigned elevated rights to users in their group. Rights are assigned based on Group membership. That means that a manager will be able to see call details of any member of their group, independent of the call destination or origin.

Managing Extension Groups

Group Membership

Extensions in this Group

Members Default Group Rights Member Rights

Available extensions(not members of this group)

Extension	Member of
100 Gareth James	3CX Sales, DEFAULT, TESTINGDEPT
101 Home IT EXT	3CX Sales, DEFAULT, TESTINGDEPT
103 Nick iHome	DEFAULT, TESTINGDEPT
104 Jonas Fung	3CX Sales, DEFAULT, TESTINGDEPT
110 Terence Black	3CX Sales, DEFAULT
113 Kurt Seiger	CEO
117 Elizabeth Papas	DEFAULT
118 Stacey Mitchel	3CX Sales, DEFAULT
122 Agnes Clayton	3CX Sales, CEO, DEFAULT, Root
123 Aram Home	3CX Sales, DEFAULT
124 Aram Sargysan	3CX Sales, DEFAULT
126 Vivian Bridgewater	3CX Sales, DEFAULT
127 Emilia McDonalds	3CX Sales, DEFAULT
128 Tony Zhu	3CX Sales, DEFAULT
129 Frank Gao	3CX Sales, DEFAULT

Add >

< Remove

Extensions in this Group

Group Name 3CX Development

Publish group presence information to all company users ☐

Delete Group

Members

Extension	Member of
102 Maria Johnson	3CX Development, DEFAULT, TESTINGDEPT
105 Dexter Morgan	3CX Development, 3CX Sales, DEFAULT, TE:
106 Emily White	3CX Development, DEFAULT
107 Ricky Dellinger	3CX Development, 3CX Sales, DEFAULT
108 Lia Caren	3CX Development, 3CX Sales, DEFAULT
109 Nicholas Kirk	3CX Development, 3CX ER3, 3CX ER4, 3CX :
111 Sandy Martin	3CX Development, DEFAULT
112 Shana TwainGV	3CX Development, DEFAULT
114 Monique Ferrara	3CX Development, DEFAULT
115 Samantha Hunt	3CX Development, 3CX ER3, 3CX ER4, 3CX :

Adding an Extension Group

To create an extension group:

1. In the 3CX Management Console, click on the “**Extensions**” node and click on the “**Add Extension Group**” tab, from the top menu.
2. Now proceed to add extensions by selecting extensions from the left list and clicking on the “**Add**” button. Note that Extensions can now be part of multiple groups. **Publish Group information to all company users:** This option publishes your Group presence to all the 3CX Phone System Users (all the extensions can see your group presence and calls).

Extensions in this Group

Members

Default Group Rights

Member Rights

Extensions in this Group

Extension ▲	Role	Overrides rights
102 Maria Johnson	User	YES
105 Dexter Morgan	Manager	YES

Role of user in this group

Member Rights

User

Manager

User

Rights currently assigned

Role of user in the group

You can select which user will be the Manager of the group by:

1. Clicking on the **“Member Rights”** tab, then clicking on the user’s name in the **“Extensions in this Group”** list.
2. You may then select the **“Role of user in this group”** where you may select **“Manager”** or **“User”** and accordingly the user will be granted the rights of a manager or a user. You can configure one or more **“Managers”** for any group. Typically this would be a department supervisor. Group Managers will be able to see the call details of everyone within that group.

Group Default Rights

The **“Default Group Rights”** tab specifies the default rights that are assigned to each user role. The default **“Manager”** and **“User”** rights apply to the current extension group. You can configure these rights separately for each extension group.

To configure the default group rights:

1. Click on the **“Default Group Rights”** tab. These settings pertain to what group members and users within this group can see and do in 3CXPhone.
2. Optionally you can enable the Managers extension to perform operations on calls of the group members. Check the option **“Perform operations on calls to users of this group”** to enable this.
3. Similarly, you can also configure what rights User group members have.
4. Click **“OK”** to save the group and rights information. Users will need to logout and login to 3CXPhone to see their new rights reflected.

Customizing Rights for Individual Users

Extensions in this Group

Members Default Group Rights **Member Rights**

Extension	Role	Overrides rights
102 Maria Johnson	User	YES
105 Dexter Morgan	Manager	YES
106 Emily White	Manager	NO
107 Ricky Dellinger	User	NO
108 Lia Caren	User	NO
109 Nicholas Kirk	Manager	YES
111 Sandy Martin	User	NO
112 Shana TwainGV	User	NO
114 Monique Ferrara	User	NO
115 Samantha Hunt	Manager	NO
116 George Georgeou	Manager	YES
119 Ken Jones	User	NO
120 Dave Chapelle	User	NO
121 Clint Bartholomew	Manager	NO
125 Andreas Christodolo	User	NO
132 Michael Borg	User	NO

Role of user in this group
Member Rights User

Rights currently assigned

- ☒ Can see group members
- ☒ Can see group calls
- ☒ Show presence to group members
- ☒ Show calls to group members
- ☒ Perform operations (divert, transfer, take) on any active call to group members
- ☐ Can Barge In (Barge, Listen or Whisper) (Requires 3CX PRO Edition)
- ☐ Can Intercom
- ☐ Allow parking
- ☐ Allow IVR control
- ☒ Allows to manage Company Phonebook

[Reset to Default](#)

Setting Extension Group Rights

If you want a particular user or manager to have more (or fewer) rights than the defaults specified in the **“Default Group Rights”** tab, you may specify these rights by:

1. Clicking on the member’s name in the **“Extensions in this Group”** list in the **“Members Rights”** tab.
2. Ticking off the checkboxes with the rights that you want the member to have in the **“Rights currently assigned”** part of the tab.
3. The options available for the users are:
 - Can see group members – Allows the user to see all group members presence.
 - Can see group calls – Allows the user to see calls made by group members.
 - Show presence to group members – Shows the user’s presence to group members.
 - Show calls to group members – Shows user’s calls to group members.
 - Perform operations (divert, transfer, take) on any active call to group members.
 - Can Barge in – Can barge in to calls made by group members.
 - Can Intercom – Allows the user to intercom other extensions.
 - Allow parking – Allows the user to park calls.
 - Allow IVR control – Allows user to control the IVR.
 - Allows to manage Company Phonebook – Allows the user to add / edit / Delete contacts from the Company Phonebook via the 3CXPhone for Windows Client.
4. Select the options that suit your needs accordingly and then click **“Apply”** to apply the chosen rights. A restart of the configured extensions 3CXPhone client is needed for the changes to take effect.

Importing & Exporting Extensions

If you need to create a large number of extensions it is easier to bulk import the them. There are two ways to do this, using Active Directory or a CSV file.

Importing from Active Directory

You can import directly from Active Directory or other LDAP server. The added benefit to this method is that every time a change is made to the user configuration in Active Directory, users can be re-synchronised, in which case only the updates will be imported. The step by step guide on how to [Import Extensions via 3CX Active Directory](#) explains the process in detail.

Exporting / Importing to / from a CSV file

Create a spreadsheet with columns for each field that you wish to import and save this as a CSV file. The document [How to Create Extensions in Bulk using a .csv file](#) has a detailed explanation on how to achieve this.

Alternately you can create at least one extension then use the method that explains how export your extensions to a .csv. When you export an extension, the columns required will be created in the exported .csv file. You can then populate this .csv file, with your users, and import it back in, using the method immediately below.

To import Extensions from the .csv file:

1. Log in to the 3CX Management Console and click on the **“Extensions”** node.
2. Click on the **“Import extension”** button.
3. Browse for your extension CSV file, select it and click **“Open”** to import your extension to the 3CXPhone System.

If you need to export your extensions to a CSV file format to either save them as backup or to make a lot of changes to the users follow the next steps:

1. Log in to the 3CX Management Console and click on the **“Extensions”** node.
2. Select the extensions that you want to export and click on the **“Export extension”** button.(You can use Shift or Ctrl keys to choose multiple extensions)
3. Type in a filename and save the CSV file.

Adding a VoIP Provider / SIP Trunk

Introduction

VoIP providers “host” phone lines and are replacing the traditional telco lines. VoIP providers can assign local numbers in one or more cities or countries and route these to your phone system. In most cases they also support number porting.

VoIP providers are often able to offer better call rates because they may have an international network or have negotiated better rates. Therefore, using VoIP providers can reduce call costs. However, be aware that each VoIP call requires bandwidth. VoIP is real time, so it does place a demand on your Internet connection. As a rule of thumb, each call will consume approximately 30-120 kb per second, depending on which codec you use. The document, [Bandwidth Overhead over DSL connections](#), includes detailed information about bandwidth consumption, including particular codecs bandwidth usage.

3CX recommends using supported VoIP providers. All supported VoIP providers have been tested for interoperability with 3CX Phone System, and are re-tested with each new build. Their configuration templates are also included with 3CX Phone System to allow you to quickly and easily add them. See the list of [3CX Supported SIP Trunk Providers](#)

3CX Phone System supports two types of VoIP Providers:

- **Registration Based** – These VoIP providers require the PBX to register with the provider using an authentication ID and password. Most of the VoIP providers pre-defined in 3CX Phone System are registration based.
- **IP Based / SIP Trunk** – IP Based VoIP Providers (also known as SIP Trunks) do not generally require the PBX to register with the provider. The IP address of the PBX needs to be configured with the provider, so that it knows where calls to your number should be routed.

Requirements for using a VoIP Provider / SIP Trunk

If you plan to use a VoIP provider, you need to have a firewall/router/NAT device that supports STATIC PORT MAPPINGS. Often routers will perform port address translation, which will cause problems such as one way audio, failing inbound calls and so on. It is also highly recommended that you have an [External FQDN](#) that resolves to a static external IP. If your external IP changes intermittently, inbound calls will fail. See the [Firewall & Router Configuration](#) for details need to configure your firewall/router/NAT device.

Configuring a VoIP Provider / SIP Trunk

Step 1: Create an Account with a VoIP Provider

First off, you need to have an account with a VoIP service provider. 3CX Phone System supports most popular SIP based VoIP service providers and we recommend using one that has been tested by 3CX. As 3CX includes pre-configured templates for these VoIP providers. Simply select “**VoIP Providers**” > “**Add VoIP Provider**” button to see a list of supported providers.

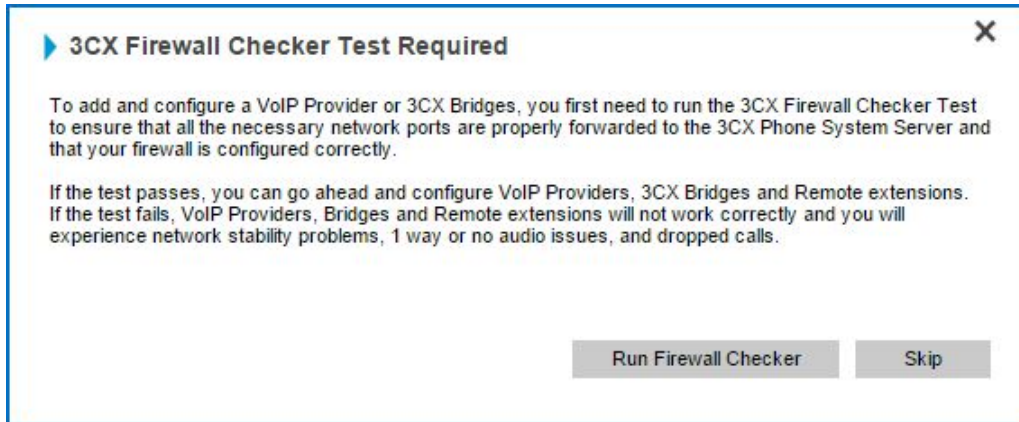
If there is no VoIP provider in your country you can use Skype for SIP which has a global presence.

Step 2: Add the VoIP Provider Account in 3CX Phone System

After you have created the VoIP provider account, you will need to configure the account in 3CX Phone System. To do this:

1. In the 3CX Phone Management console menu, select “**VoIP Providers**” > “**Add VoIP**”

Provider”



2. The 3CX Phone System will prompt you to conduct a [Firewall Test](#) . Frequently, the internet facing firewall sitting between 3CX Phone System and the VoIP provider is not correctly configured or is not able to correctly route VoIP traffic. To check the firewall configuration, it is important to perform a firewall check using the inbuilt firewall checker.
 - Click **“Run Firewall Checker”**. It will use the STUN server configured in **“Settings” > “Network” > “STUN Server”**
 - Ensure that your firewall allows and correctly routes connections on Port 5060 (for SIP) and Ports 9000 – 9099 (for RTP Audio) to the PBX. If the firewall checks fail, you will not be able to reliably make and receive VoIP provider calls and you will have to edit your firewall configuration.

After successfully completing the test, return to the VoIP Provider Wizard.

Note: 3CX does not provide specific firewall configuration support.

A screenshot of the "Add VoIP Provider Wizard" form. It has a title bar with a globe icon and the text "Add VoIP Provider Wizard". The form itself has a header "Add VoIP Provider Wizard" and contains the following fields:

- "Name of Provider" with a text input containing "Example VoIP" and an information icon (i).
- "Country" with a dropdown menu showing "Generic" and an information icon (i).
- "Provider" with a dropdown menu showing "Generic VoIP Provider" and an information icon (i).
- "URL" with a text input containing "http://www.3cx.com" and a blue arrow icon.

At the bottom, it says "More 3rd party tested providers can be found here: <http://www.3cx.com/partners/voip-providers.html>".

Add VoIP Provider Account

3. Enter a friendly name for this VoIP provider account.
4. Select the Country that the VoIP provider operates in.
5. Select your VoIP Provider from the Provider drop down list.
 - If the provider is not listed, select “Generic VoIP provider”, or “Generic SIP Trunk”, (If using a generic provider we will not be able to guarantee that 3CX will work with this VoIP provider), Click **“Next”**.
6. The SIP server hostname or IP may be pre-filled. Compare these with the details that you have received from your VoIP provider and check that these are indeed correct. Depending on the VoIP provider that you are using, some fields will be disabled. This means you do not

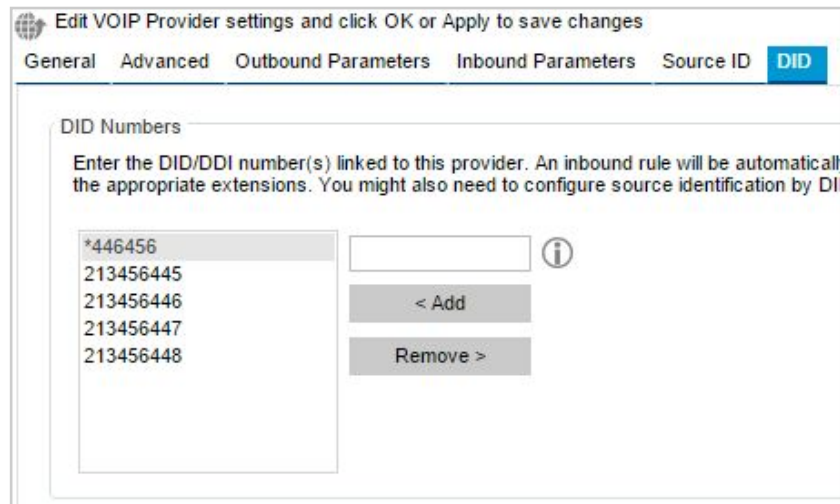
need to change them. Click **“Next”** to continue.

7. Now enter the VoIP provider account details. In the External number field, enter the VoIP line number that has been assigned to you. Then enter the Authentication ID/username and password of your VoIP provider account. Specify the number of simultaneous calls your provider allows. Click **“Next”** to continue. If you are using a SIP trunk, the password will be greyed out, since authentication is done via IP.
8. Specify how calls from this VoIP provider should be routed. You can specify a different route outside office hours. The routing configured here will take effect when no inbound routing rules are matched.
9. On the next page, you can optionally configure an outbound call rule, which will be used to route outbound calls through the new provider. This is normally done by routing calls starting with a specific prefix. Enter the dialling prefix in the **“Calls to numbers starting with (prefix)”** text box. To make calls via this provider, precede the number to be dialled with this prefix.

More about Outbound and Inbound Rules can be found in the [Trunk Management](#) Section.

DID's and Inbound Call Identification

If your VoIP provider has provided you with DID numbers, you will need to specify these in the DID tab. To do this:



1. In the 3CX Management Console, select **“VoIP providers”** click on the VoIP provider you want to configure.
2. Click on the **“DID”** tab.
3. Add the DID numbers associated with your account. An Inbound Rule, which can be configured at a later stage, will be created for each number specified in this list.

You can also see the list of inbound rules by expanding the **“Inbound Rules”** node.

More about Inbound Rules can be found in the next Chapter

Configuring VoIP Gateways

Introduction

External calls can be made on PSTN/phone lines or via VoIP providers. A traditional PBX requires you to connect the PSTN lines to the PBX hardware box; however in the case of 3CX Phone System you have more options:

- Connect PSTN lines (physical phone lines) to a VoIP Gateway situated on your internal network.
- Connect PSTN lines to a VoIP add-in card, installed in the 3CX Phone System machine or on another machine.
- Use a “hosted” phone line from a VoIP Service Provider. In this case the VoIP service provider gives you the ability to make calls via your internet connection. This is explained in the next chapter.

To make & receive external phone calls via your regular phone lines, you will have to buy and configure a VoIP gateway or VoIP add-in card. This chapter explains what they are and how to configure them.

What is a VoIP Gateway or VoIP Add-on Card?

A VoIP gateway is a device which converts telephony traffic into data, so that it can be transmitted over a computer network. In this manner PSTN/telephone lines are “converted” to SIP extensions, allowing you to receive and place calls via the regular telephony network. VoIP Gateways exist for analog lines as well as BRI, PRI/E1 lines and T1 lines. VoIP cards do the same thing, but are add-in cards that are installed into a computer.

What is a Port?

A port is a physical line outlet on a gateway or VoIP card. In the case of an analog line, one port is used for each voice channel. In the case of BRI ISDN, one port allows for two voice channels, and in the case of E1 or T1 ports, each port represents 30 and 23 channels respectively. Just as it is necessary to configure a phone to register with the phone system, it is also necessary to configure the VoIP gateway or card to register its ports with 3CX Phone System. Each port gets a SIP user ID, Password and virtual extension number. To the IP PBX, the PSTN lines appear just like any other SIP extension which can be used for external calls.

Supported VoIP Gateways

It is important to use a VoIP gateway supported by 3CX. Supported gateways have been tested by 3CX and are automatically configured with their correct settings. If using the default configuration, 3CX will also provide first line support of their use with 3CX phone System. A list of the latest supported gateway hardware, can be found on the [3CX Support](#) page.

Configuring VoIP Gateways

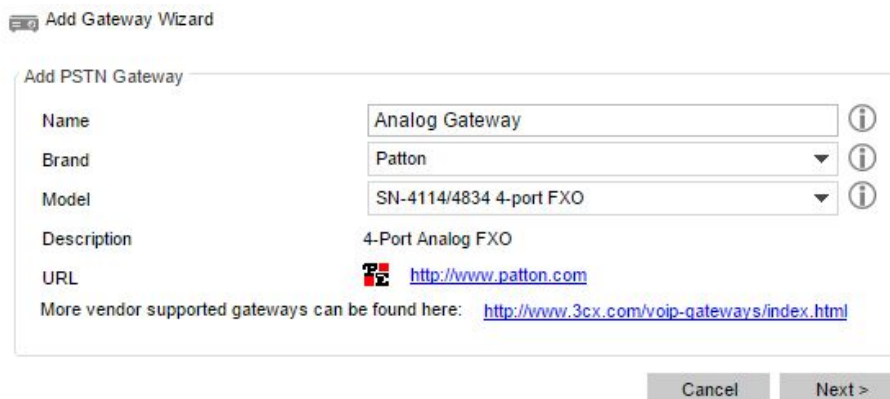
In order to make use of a VoIP Gateway:

1. In 3CX Phone System, configure the settings that will be used by the Gateway to connect to the PBX.
2. Configure the VoIP Gateway using the settings made available by the PBX

Let's see how this is done in more detail:

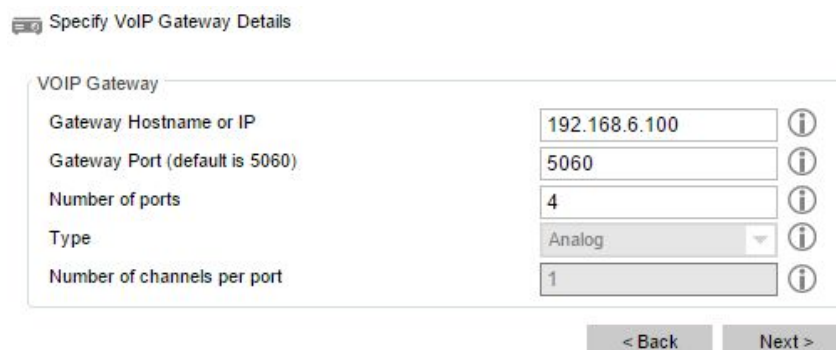
Step 1: Configure the VoIP Gateway in 3CX Phone System

The first step is to create the VoIP gateway in the 3CX management console.



Choosing Gateway Template


1. In the 3CX Management Console menu click on **“Add” > “PSTN Gateway”**.
2. In the name field, enter a friendly name for the VoIP gateway. Now choose the gateway brand and model that you are using from the list. If you configuring an unsupported VoIP gateway, choose Generic Gateway Device. Click **“Next”**.
3. Depending on the gateway you selected, you might be asked additional options, such as what country the device will be connected in. Some options are line specific and you may need to check with your line provider.



Specifying VoIP Gateway Details

4. Enter the hostname or IP of the VoIP Gateway in the **“Gateway Hostname or IP”** field, and specify the SIP Port on which the gateway is operating. By default this is 5060.
5. If you selected a Generic device, you need to specify the number and type of ports the gateway supports, i.e. analog, BRI, PRI or T1. This will set up one account for each port and enable the corresponding number of calls/lines for that account.
 - An analog line supports 1 call.
 - A BRI port supports 2 calls.
 - An E1 (PRI) supports 30, and a T1 (PRI) supports 23.

For example, if you specify 1 x T1 port, it will create one SIP account which can handle up to 23 calls. If you wish to have each line individually addressed, simply select 23 * Analog lines. Click **“Next”**.

 Create ports

The following ports will be created in the "Create Ports" screen. You can edit the Port identification and authentication settings before they are created. Note that the Port identification is used for identification purposes, and the internal line number is used by 3CX Phone System to address the line connected to the port on the VoIP Gateway. Therefore the Internal Line Number range should be different from the extension number range. You can configure to which extension incoming calls should be routed based on whether they are inside or outside office hours (inbound route).

Remove selected	Virtual extension	Authentication ID	Authentication Password	Channels	Port Identification	Inbound Route Day	Inbound Route Night
<input type="checkbox"/>	90001	90001	1abyi0p	1	90001	100 ▼	100 ▼
<input type="checkbox"/>	90002	90002	7wza8bp	1	90002	100 ▼	100 ▼
<input type="checkbox"/>	90003	90003	3tr0u4e	1	90003	100 ▼	100 ▼
<input type="checkbox"/>	90004	90004	vipv762	1	90004	100 ▼	100 ▼

Adding PSTN Lines

6. The individual ports will be “created” and displayed in a columnar format.
 - **Virtual extension number** – In effect the VoIP Gateway “converts” each line/port to an extension, so that the phone system can receive and forward calls to it. The virtual extension number is a number assigned by the 3CX Phone System so that it can address it as an extension. There is no need to change this field.
 - **Authentication ID & Password** – These values are used to authenticate the ports with 3CX phone system.
 - **Channels** – The Channels field shows how many simultaneous calls the port supports. An analog line supports 1 call; a BRI port supports 2 calls, an E1 (PRI) 30, and a T1 (PRI) 23. If you prefer to address each line individually, you can create additional SIP accounts and change the number of channels supported by each account to 1. Note that your VoIP Gateway must support this – especially higher density VoIP Gateways are easier to configure if you use one account for all lines connected to a port.
 - **Port Identification** – This field shows the identification number given to the port.
 - **Inbound Route Day/Night** – If the port will receive inbound calls, you can specify to which extension, ring group or digital receptionist a call must be routed.
7. On the next page, you can create an outbound rule for the VoIP Gateway that is being configured. For example, you can have calls where the called number starts with a prefix routed to this Gateway. Click “**Finish**” to create the VoIP Gateway.

Step 2: Configure the VoIP Gateway Device

After you have configured the PSTN ports, a summary page is shown. The configuration of the VoIP gateway will vary depending on the brand of the device.

BeroNet Gateways

If you have a BeroNet gateway, you will need to:

1. Use the “bfdetect” tool to find the gateway on the network.
2. Configure the Gateway in 3CX as described in the previous step.
3. Click on the "configure BeroNet card" button at the bottom of the summary page
4. Login with admin/admin and follow the screen instructions to complete the setup.
5. More information can be found at: <http://www.3cx.com/voip-gateways/beronet-berofix-400>

Patton SmartNode Gateways

If you are using a Patton SmartNode gateway, you will need to:

1. Use the Patton SmartNode Discovery Tool to find the gateway on the network.
2. Configure the Gateway in 3CX as described in the previous step.
3. Download the Patton configuration file from the summary page (or from the “**VoIP/PSTN Gateway**” node > “**Generate Config File**” button).
4. Upload the configuration file to the Patton gateway to automatically provision it.

5. More information can be found at: <http://www.3cx.com/blog/voip-howto/patton-smartnode-configuration/>

Welltech Gateways

See this link for information how to configure the Welltech gateway:

<http://www.3cx.com/voip-gateways/welltech-wellgate-2540/>

Trunk Management

Introduction

Outbound and inbound rules dictate how the 3CX Phone System routes calls based on certain criteria. You can, for example, configure rules to control through which VoIP gateway or provider a call will be placed with, based on least cost routing. So that local calls go through your ISDN lines and international calls through your VoIP provider. You can also create DID (Direct Inward Dialing) numbers which will allow you to place calls directly to a user's extension, bypassing the receptionist or IVR.

Creating Outbound Call Rules

An outbound rule denotes through which VoIP gateway/provider an outbound call should be placed. Based on who is making the call, the number that is being dialled or the length of the number.

When configuring a VoIP Gateway or a VoIP Provider, you will be asked to create an outbound rule that will be used to route calls to the Gateway or Provider. You can also edit these rules or create new ones from the outbound rules node.

↑ Create an Outbound Call Rule to configure on which PSTN port, VOIP provider or bridge an outbound calls should be placed on

General

Rule Name ⓘ

Apply this rule to these calls

Define to which outbound calls the rule must apply

Calls to numbers starting with prefix	<input type="text" value="9"/> ⓘ
Calls from extension(s)	<input type="text" value="100-200"/> ⓘ
Calls to Numbers with a length of	<input type="text" value="8"/> ⓘ
Calls from extension group	... <input type="button" value="Select"/> ⓘ

Make outbound calls on

Configure up to 3 routes for calls. The second and third route will be used as backup. For each route, digits can be stripped or added.

Route		Strip Digits	Prepend	
Route 1	<input type="text" value="ISDN"/>	<input type="text" value="0"/>	<input type="text"/>	ⓘ
Route 2	<input type="text" value="BLOCK CALLS"/>	<input type="text" value="1"/>	<input type="text"/>	ⓘ
Route 3	<input type="text" value="BLOCK CALLS"/>	<input type="text" value="1"/>	<input type="text"/>	ⓘ

Creating a New Outbound Rule

To create an outbound rule:

1. From 3CX Management Console menu under select **"Outbound Rules" > "Add Outbound Rule"**, and enter a name for the new rule.
2. Specify the criteria that should be matched for this outbound rule to be triggered with. In the **"Apply this rule to these calls"** section, specify any of the following options:
 - Calls to numbers starting with prefix – Apply this rule to all calls starting with the number you specify. For example, enter 9 to specify that all calls starting with a 9 are outbound calls and should trigger this rule. Callers should dial "9123456" to reach number "123456".
 - Calls from extension(s) – Select this option to define particular extensions or extension ranges for which this rule applies. Specify one or more extensions separated by commas, or specify a range using a -, for example 100-120.
 - Calls to Numbers with a length of – Select this option to apply the rule to numbers

with a particular digit length, for example 8 digits. This way you can capture calls to local area numbers or national numbers without requiring a prefix.

- Calls from extension group – Rather than specifying individual extensions, you can select an extension group.
3. Now specify how outbound calls matching the criteria should be handled. In the **“Make outbound calls on”** section, select up to three routes for the call. Each defined gateway or provider will be listed as a possible route. If the first route is not available or busy, 3CX Phone System will automatically try the second route.
 4. You can transform the number that matches the outbound rule before the call is routed to the selected gateway or provider using the “Strip digits” and “Prepend” fields:
 - Strip digits – Allows you to remove one or more digits from the called number. Use this to remove the prefix before it is dialled on the gateway or provider if it is not required. In the example above, you would specify to remove one digit, in order to remove the prefix “9” before it is dialled.
 - Prepend – Allows you to add one or more digits at the beginning of the number if this is required by the provider or gateway.
 5. You can configure these options per outbound rule, since a rule that applies to a VoIP gateway connected to the local PSTN would normally require different criteria than a rule that applies to a VoIP provider.

A complete example showing how to create an outbound rule in 3CX Phone System can be found at <http://www.3cx.com/blog/voip-howto/outbound-rules-a-complete-example/>.

Creating DID Numbers / Inbound Rules

Many companies provide users and/or departments with “Direct or DID numbers”, which allow their contacts to call them directly, bypassing the receptionist. DID numbers are referred to as DDI numbers in the United Kingdom and as MSN numbers in Germany. Even if you make use of a digital receptionist, a direct line / number is often preferable because it's more convenient for the caller.

+ Add DID Edit DID Delete DID Move Up Move Down Export Import Show Filter						
	VoIP Gateway/Provider	Port Identification	DID Name	DID Number	During Office Hours	Out of Office Hours
DID	VoIP Gateway	90001	Sales	*600	800	800
DID	VoIP Gateway	90001	Marketing	*601	803	803
DID	VoIP Gateway	90001	Technical Support	*602	801	801
DID	VoIP Gateway	90001	Management	*603	102	102
DID	VoIP Gateway	90001	Development	*604	101	101
DID	VoIP Gateway	90001	HR	*605	888	888
DID	VoIP Gateway	90001	Security	*606	101	101
DID	VoIP Gateway	90001	IT	*608	100	100
DID	VoIP Gateway	90001	Operations	*607	100	100
DID	VoIP Gateway	90001	Accounting	*609	100	100
DID	VoIP Gateway	90001	Compliance	*610	100	100

Configuring DID Numbers

Direct dial numbers are easily implemented using **“Inbound Rules”**. DID numbers are provided by your VoIP provider or Phone Company and are virtual numbers assigned to your physical lines. Usually you are assigned a range of numbers, which is linked to an existing BRI/T1/E1. There will be an extra charge per number or per range, but this will be a fraction of the cost of adding physical lines. Enquire with your Phone Company or VoIP provider for more information about DID numbers.

Adding DID's

↓ Configure inbound routing of calls based on DID/DDI or Caller ID

Inbound rule name
Enter a DID or string to look for in the SIP "to" field. Use wildcards (*) to match any digit for that entry. For example, entries 22444032 OR 2244403* will both match calls with a dialled number of +35722444032 in the "to" field

Inbound rule name ⓘ

Number/Mask
Select from the drop-down below the type of inbound rule you want to create and enter a mask for this DID. You can use the * as a wildcard either before or after your mask.

Inbound Rule type ⓘ

DID/DDI number/mask ⓘ

Apply this rule to these ports
Select the Gateway you want this DID/DDI rule to be applied to. You can select on the whole gateway which will apply the rule to all the ports, or you can select individual ports.

Available ports

- ☐ Generic ⓘ
- ☒ 10000[12549948] ⓘ
- ☐ ISDN ⓘ

Office Hours
Configure where calls to this DID/DDI should be routed during office hours.

☐ End Call

☐ Connect to Extension ⓘ

☒ Connect to Queue / Ring Group ⓘ

☐ Connect to Digital Receptionist ⓘ

☐ Voicemail box for Extension ⓘ

☐ Forward to Outside Number ⓘ

☐ Send fax to ⓘ

☐ Set up Specific Office Hours ⓘ

☐ Include holidays ⓘ

☒ Apply the same routing logic Outside of office hours ⓘ

☐ Play Holiday Prompt on Public Holiday ⓘ

Selecting where to Route Calls to this DID

To add a DID:

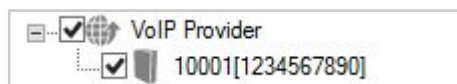
1. From 3CX Management Console menu, select **"Inbound Rules" > "Add DID"**.
2. Enter a name for the DID (for example Sales). Note: The DID name can be prepended or appended to the Caller ID so as to identify on which number a caller has called you from. You can enable this from the **"Settings" > "General" > "Global options"** page under **"Inbound name to Caller ID"**.
3. Enter the DID number as it will appear in the SIP "to" header. 3CX Phone System will match the number inserted in this field with the "to" header, starting from the last part of the received string, thus avoiding any differences in the format of the number. For example, if you are based in the UK and your DID number is 0845-2304024, then you can enter the number 2304024. This will match any DID number inserted in the "to" field ending with these numbers, including +448452304024, 08452304024, 00448452304024, and, of course, 2304024.
4. Select for which Gateway or Provider ports you wish to add this DID to. If the DID number is associated with multiple ports, then you must select each ports. An inbound rule will be created for each port that you select.
5. Specify where you wish to direct calls made to this DID:
 - End Call
 - Connection to extension
 - Connect to Queue/Ring Group
 - Connect to Digital receptionist
 - Voicemail box for extension
 - Forward to outside number

- Send fax to email of extension
6. You can specify that an incoming call is routed differently if it is received outside office hours. De-select the **“Same as during office hours”** option to specify a different route.
 7. Click **“OK”** to create the DID / Inbound rule.

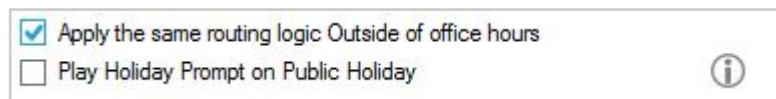
Configuring Different Office Hours per DID

Businesses working globally across different time zones, will want to configure different office hours and holidays per DID. For example a company’s 24 hour world wide support. To do this:

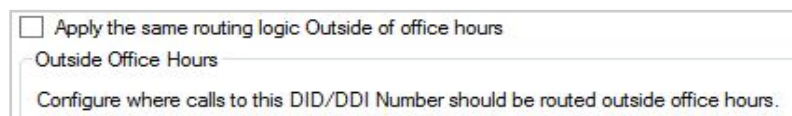
1. From 3CX Management Console menu, click **“Add” > “DID / Inbound route”**.
2. Give the Rule a descriptive name. This will be used to identify which DID has been used when troubleshooting, as it can be seen in the logs. It will also be used for identifying which DID is being used to make the call, and will be displayed in the Caller ID of the destination phone. This option can be selected, in the **Global Options**, to prepend the name of the DID.
3. In the “DID number/mask” type in the number. This can be a whole number, or a wildcard, both formats will be considered for processing. For example **1235551234** or ***234**.



4. Choose the provider/gateway port. This is used to identify over which line the call will be coming in from. A VoIP Provider will only have one available port. A VoIP (PSTN) Gateway, will have one port for each physical line, depending on the make and model. Patton gateways for example will have one port for each line. Beronet gateways will only have one port per gateway.



5. In order to enable custom DID opening hours, uncheck the **“Apply the same routing logic Outside of office hours”** box.



6. Choose where you want to route out of office hours calls in the **“Outside Office Hours”** section.



7. Check **“Set up Specific Office Hours”**. This option will only be enabled if you disable **“Apply the same routing logic Outside of office hours”**. Click **“Set up Specific Office Hours”** to open up the dialog box.

Set up Specific Office Hours

Set up Specific Office Hours

	From:	To:		Office Hours
Monday	09:00	16:59	Add > < Remove	09:00 - 16:59
Tuesday	09:00	16:59	Add > < Remove	09:00 - 16:59
Wednesday	09:00	16:59	Add > < Remove	09:00 - 16:59
Thursday	09:00	16:59	Add > < Remove	09:00 - 16:59
Friday	09:00	16:59	Add > < Remove	09:00 - 16:59
Saturday	08:00	17:00	Add > < Remove	
Sunday	08:00	17:00	Add > < Remove	

OK Cancel

8. Set your office hours and click **“OK”**.
9. Check **“Play Holiday Prompt on Public Holiday”** to play the holiday prompt whenever there is a holiday.
10. Click **“OK”** to accept the configuration of both the routing of the call as well as the opening hours of the DID.
11. Go to the **“Settings” node > “General”**.

Office Hours

Specify your office hours. Calls can then be treated differently based on whether they are received during or out of office hours. Specify holidays that are to be treated as outside office hours.

Configure Office Hours **Configure Holidays**

12. In the **“Office Hours”** section Click on **“Configure Holidays”**. This will open up a special dialog box, where you can define holidays and record or select pre recorded .wav files to play for the holidays

Set holidays

Set holidays

In addition to office hours and days of the week, you can define specific dates as public holidays, so that these dates will be considered out of office hours as well.

Name: New Year

Date: 1 January each

Prompt: OfficeClosed.wav

Add Update Delete

Name	Date	Prompt
New Year	each year on 01 Jan	OfficeClosed.wav

OK Cancel

13. Give the Holiday a Name, for example **“New Year”**.
14. Choose the date for the holiday, for example 1 January. Since New Years Day recurs every year, you can choose **“each”** instead of a year. Holidays with a steady date each year can

be defined like this. Dates which do not have a steady date each year can be defined as and when a holiday occurs, for example a bank holiday, you can define the current year or the next year.

15. Choose a prompt to play for the Holiday. Click **"Add"**.
16. Choose a prompt from the list of files already in the repository, and click **"OK"**.
17. Click **"Add"** to add the holiday and prompt to the PBX.
18. Click **"OK"** to exit the holiday configuration
19. Click **"OK"** in the General Settings to save the configuration.

Troubleshooting DID Numbers

If you have created the DIDs, but calls are not being forwarded as expected, do the following:

1. Go to the Server Activity log node in the 3CX management Console. The Server Status screen lists current server activity and logs calls that are being received and for which number they were received on.
2. Call the DID number that you configured, and monitor the Server Status log. You will see a line similar to:
Incoming call from 1000 to <sip:789456123@3CXPhone System>
where "1000" is the internal number of the line configured to receive calls from the VoIP Gateway or VoIP Provider and *<sip:789456123@3CXPhone System>* is the content of the "To" header of the INVITE, i.e. the intended recipient.
3. Now analyse the "To" header carefully and ensure that the DID number you have dialled is present in the "To" header: *<sip:789456123@3CXPhone System>*.
4. If you see a text 'Review invite & adjust source identification, you need to configure Source identification. See the chapter "Adding a VoIP Provider / SIP Trunk" (<http://www.3cx.com/docs/adding-voip-provider-sip-trunks/>) for more information.

Exporting & Importing DIDs

Exporting DIDs

If you need to export your extensions to a CSV file format to either save them as backup or to make changes to them, follow these steps:

1. Log into the 3CX Management Console.
2. Click on the **"Inbound Rules"** node and select the DID's that you want to export.
3. Click on the **"Export"** button to begin exporting your DID rules.
4. Select a location and a file name for your exported DID rule file and click "Save". Your rules will be exported and saved in the CSV file.

Importing DID's

If you want to create multiple did rules you can do so by creating the necessary fields on a CSV file using the correct format (<http://www.3cx.com/blog/docs/importing-dids/>) and then importing them back into 3CX by using the import function.

To import your DID's into 3CX from a CSV file follow these steps.

1. Log into the 3CX Management Console.
2. Click on the **"Inbound Rules"** node and click on the **"Import"** button.
3. Browse to the file that contains the DID rules that you want to import, select it and click **"Open"**.
4. The rules will be imported in the 3CX Phone System.

Information about Caller ID Reformatting can be found [here](#).

Configuring Digital Receptionist / Auto Attendant

Introduction

The digital receptionist feature allows the 3CX Phone System to answer phone calls automatically. When a call comes in to the phone system the caller is presented with a list of options. The caller can then choose the appropriate option using the numbers on their phone keypad. Using this feature you can implement a menu, for example: “For sales press 1. For support press 2 or wait on the line to be transferred to the operator”. A digital receptionist is also known as an auto attendant.

You can configure many different digital receptionists each with their own extension number. Depending on your preferences you may configure these to answer calls based on which line the call comes in from, as well as whether the call is received inside or outside office hours. For example, you can have a different prompt for outside office hours that does not include the options to be transferred to groups/queues that do not have agents available.

Recording a Menu Prompt

Before you create your digital receptionist, you must first write down the menu options you wish to offer the caller and then record the announcement. A simple example would be “Welcome to Company XYZ, For sales press 1. For support press 2 or stay on the line for an operator”

Note: It is generally recommended to put the number the user should press after the option, i.e. “For sales, press 1”, rather than “press 1 for sales”. This is because the user will wait for the desired option and only then “register” what number to press.

Creating a Digital Receptionist

The Digital Receptionist (Auto Attendant) answers and directs calls automatically

General

Configure the Name, Prompt and Time out for this Digital Receptionist

Virtual extension number (Cannot be in use as an extension) ⓘ

Name ⓘ

Redirect To MS Exchange ☐ ⓘ

Prompt Add ⓘ

Menu options

key	Action	Extension Number	ⓘ
0	Connect to Queue	805 805LiveQueue	ⓘ
1	Connect to Queue	854 854-QueueSPM	
2	Repeat Prompt		
3			
4			
5			
6			
7			
8			
9			
Timeout	5	Connect to Extension	100 Gareth James ⓘ
Non-existent extension	Repeat Prompt		ⓘ

OK Cancel Apply

Configuring a Digital Receptionist

You can create multiple digital receptionists and link them to a particular line. To create a digital receptionist:

1. In the 3CX Phone System Management Console menu, select **"Digital Receptionist" > "Add Digital Receptionist"**.
2. Specify a name and virtual extension number for the digital receptionist.
3. Now click on the **"Record"** button and enter your extension number. You will be called so that you can record the prompt. The file will be copied into the %allusersprofile%\3CX\Data\lvr\Prompts or C:\ProgramData\3CX\Data\lvr\Prompts directory depending on your OS. Alternatively click on the browse button and specify a file that you previously recorded. You must save the file in WAV format in **PCM, 8 kHz, 16 bit, Mono** format. (In Windows Sound Recorder you must use the "Save As" option to save this format) **Do not use MP3 format.**
4. Specify the menu options. Select the appropriate key, and then select from the available actions. Then specify the extension number or virtual extension number (virtual extension number in the case of Ring Group, Call Queue or to another Digital receptionist)
5. The last option, Timeout, allows you to specify how long the system should wait for an input. If it receives no input, it will automatically perform this action. This is handy for callers who did not understand the menu or who do not have a DTMF capable phone. When ready, click **"OK"** to save the digital receptionist.

Allowing Callers to Dial a Known Extension Directly

Whilst a digital receptionist prompt is playing, a caller can enter the extension number directly to be connected to an extension immediately. This allows callers who know their party's extension to avoid going through a receptionist. This option is enabled by default. If you wish to make use of this feature simply instruct your callers by explaining this in the voice prompt. For example: "Welcome to Company XYZ. For sales press 1. For support press 2. If you know your party's extension number, you may enter it now"

Call by Name

Using a Digital Receptionist, you can also direct callers to the call by name function. This allows them to find the person they wish to speak to by entering the first letters of the person's last name on the phone dial pad. The call by name function requires:

1. A self-identification message for the user. Users without a self-identification message are not accessible via the call-by-name feature.
2. User can not have a last name with Unicode characters.
3. The Call-by-name menu feature must be made available from a Digital Receptionist as one of the menu options.

Self-Identification Message

To record your self-identification message:

1. Go to your voicemail menu (Default 999).
2. Enter your voicemail PIN number.
3. Go to the options menu ('9' key).
4. Press '5' key to record the self ID message.
5. Record your name only, i.e. "Sarah Jones".

How it Works

The Call-by-name feature uses the last name of the user and compares it with the input (that has

been entered on the phone keypad). The following rules are used:

- The last name is converted to uppercase.
- All symbols except [2-9] and [A-Z] are ignored.
- The following translations for symbols are used:
 - 'ABC2' => '2'
 - 'DEF3' => '3'
 - 'GHI4' => '4'
 - 'JKL5' => '5'
 - 'MNO6' => '6'
 - 'PQRS7' => '7'
 - 'TUV8' => '8'
 - 'WXYZ9' => '9'

The caller has to type a minimum of three digits ('0' – '9') to call to a user. Digits '0' and '1' are ignored, but can be used to call users with short last names (for example, to access someone with the last name 'Li', you can type '540').

After the user has entered three digits, IVR queries the phone system database for matching users. If there are no matching users, it plays "extension not found". If there is only one matching user, the IVR plays "Please hold while I transfer your call" and redirects the call to the user. If there is more than one matching user, the IVR will wait for additional digits from the user for 2 seconds.

If IVR waits for additional digits (more than one matching user) and user presses any digit, the IVR will add this digit to the current input and check currently matching users. If there are no matching users, it will play "extension not found".

If the user does not input any more digits (2 seconds elapsed or '#' has been pressed) and more than one user is matched, then the IVR will play: "To call to Van Damme press 0. To call to Van Halen press 1. To exit press pound". In this example 'Van Damme' and 'Van Hallen' are the self-identification prompts of the matching users.

Exchange Server IVR Integration

Note: Requires 3CX Pro edition License.

Exchange Server 2010 and 2013 includes a voicemail and an IVR feature that can be interesting to use for companies that deploy Microsoft Exchange Server. The Exchange IVR feature allows you to leverage speech recognition in your company's IVR. The Voice Mail feature allows you to convert voicemails to text and forward them via email.

A detailed article on how to configure 3CX and Exchange for IVR integration, can be found [here](#).

Configuring Ring Groups / Paging / Intercom

Introduction

The Ring Groups / Paging and Intercom features add powerful capabilities to your PBX. Ring groups will help you to never miss that important customer call, whilst the Paging feature allows you to make announcements to groups of people rather like a PA system.

Note: These features are only available in the Standard and Pro editions.

Ring Groups

A ring group allows you to direct calls to a group of extensions. For example, you could define a group of three sales people, and have the general sales number “DID” ring on all three extensions at the same time or after each other. When you create a ring group, you assign it a virtual extension number. This will be the number used by the phone system to “address” the ring group.

The screenshot displays the 'Add Ring Group' configuration page in the 3CX Phone Management console. The page is titled 'Ring groups allow more than one phone to ring at the same time or in a sequence'. It is divided into three main sections: 'General', 'Ring Group Members', and 'Destination if no answer'.

General Section: This section contains fields for 'Virtual Extension Number (can not be in use as extension)' (802), 'Name' (Sales), 'Ring Strategy' (Prioritized Hunt), 'Ring Time (Seconds)' (20), and a checkbox for 'Use Multicast for Paging'.

Ring Group Members Section: This section allows selecting extensions to be members of the ring group. It features a list of 'Extensions' (100 Gareth James, 101 Home MT EXT, 103 Nick iHome, 106 Emily White, 107 Ricky Dellinger, 108 Lia Caren) and a list of 'Members' (102 Maria Johnson, 104 Jonas Fung, 116 George Georgeou, 110 Terence Black, 105 Dexter Morgan). Buttons for 'Add >', '< Remove', 'Up', and 'Down' are provided.

Destination if no answer Section: This section allows selecting a destination for the call if it goes unanswered. It includes radio buttons for 'End Call', 'Connect to Extension' (selected), 'Connect to Queue / Ring Group', 'Connect to Digital Receptionist', 'Voicemail box for Extension', and 'Forward to Outside Number'. Below these are four dropdown menus for selecting the destination: '100 Gareth James', '805 805LiveQueue', '800 800ExchangeDR', and '100 Gareth James'.

Adding a Ring Group

To add a ring group:

1. In the 3CX Phone Management console menu, select **“Ring Groups” > “Add Ring Group”**.
2. Now enter the ring group options:
 - Virtual extension number – This number identifies the ring group from other extensions. Keep the automatically generated extension number, or specify a new one as needed. Do not specify an existing extension number.
 - Name – Enter a friendly name for the ring group
 - Ring strategy – Select the appropriate ring strategy for this ring group:

- Prioritised Hunt – This will start ringing on the first extension, then the second etc.
 - Ring all – All phones will ring at the same time
 - Paging – This will page all extensions part of the group (see next section)
 - Ring time – Specify how long the phones should ring for.
3. In the section **“Ring group members”** specify the extensions that should be part of this ring group. Simply click on the extensions to the left and click on the **“Add >”** button to add them to the ring group. Move the extensions up or down to configure the priority of an extension.
 4. In the section **“Destination if no answer”**, you can define what should happen if the call does not get answered by the ring group.

Paging

Paging allows someone to ring a group of extensions and make an announcement via the phone speaker. The called party will not need to pick up the handset as the audio will be played via the phones speaker. The person paging will not hear any audio back from the people being paged. Both paging and intercom features require a phone that supports intercom and that is configured to allow it. To add a paging group:

1. Click on **“Ring Groups” > “Add Ring Group”** option to bring up the **“Add Ring Group”** page.
2. Now enter the ring group options:
 - Virtual machine number – Specify an extension number which will be used for this paging group.
 - Name – Enter a friendly name for the ring group.
 - Ring strategy – Select the **“Paging”** ring strategy.
 - Ring time – Specify how long the phones should ring for.
3. If you have phones that support multicast, and you have a very large installation with specialized requirements, you can enable the Multicast option. For most installations this option is not required.
4. In the **“Ring group members”** section specify the extensions that should be part of this paging ring group. Simply click on the extensions and click on **“Add >”** to make them a member.

Important: Before using the Paging or Intercom feature make sure that you have specified the paging/intercom prefix number by going to

1. From the 3CX Management Console, select **“Settings” > “Advanced” > “Dial Codes”** tab and adding the paging prefix in the **“Paging”** field (*11 for example).
2. Make sure that the user who is trying to page a group has the right to do so, select **“Extensions” > “Edit Extension” > “Rights”**, Check the **“Can Intercom”** option in **“Rights currently assigned”** section.

Note: The **“Ring time”** and **“Destination if no answer”** options will be ignored, since they are not relevant for paging.

Intercom

The intercom feature allows a phone system user to make an announcement to a single extension. In this scenario the audio is two way, and the called party can respond immediately without picking up the handset. To call a user via the intercom function:

1. Prefix the extension you wish to call with the paging/intercom prefix (that you specified in

“Settings” > “Advanced” > “Dial codes” > “Paging” field), followed by the extension number. For example you specified the paging prefix to be *11 to make an intercom call to extension 100 you should dial: ***11100**.

2. You can now announce your message.

Configuring Call Queues

Introduction

Call Queues allow calls to be queued whilst agents (members of a call queue) answer calls. Calls do not go unanswered but wait in a queue until an agent is available to take the call. For example, you can define a group of three sales people, and have the general sales number route to a sales call queue. If all three sales people are busy, callers will be kept in the queue until the next sales person is free. When you create a call queue, you also assign it a virtual extension number. This will be the number used by the phone system to “address” the Call Queue.

Note: The features are only available in the Standard and Pro editions of 3CX Phone System.

Creating a Call Queue

Call queues hold calls in a queue until an agent is available to answer the call

General
Configure the Number, Name, and Time-out of queue

Virtual Extension Number: 805 ⓘ
Name: Sales ⓘ
Polling Strategy: Ring All ⓘ
Ring timeout(seconds): 30 ⓘ

Call Queue Agents
Select which extensions will be agents for this Call Queue. User must also login to the Call Queue to start taking calls.

Extensions
101 Jack Horacio
103 Jane Kane
104 Carl Green
106 Marina Silet
108 Andreas Christodoulou
109 Walden Smith

Members
102 Alison Boe
105 Sebastian Walter
107 Ala Corm
100 John Reeves

Add External Agent Number: Add Edit ⓘ

Destination if no answer
Select a destination for this call if it reaches Maximum Queue Wait Time, if no agent is logged in, or if caller presses the * button.

☐ End Call
☒ Connect to Extension: 100 John Reeves ⓘ
☐ Connect to Queue / Ring Group: 800 Sales 800 Queue ⓘ
☐ Connect to Digital Receptionist: 801 801 IVR ⓘ
☐ Voicemail box for Extension: 100 John Reeves ⓘ
☐ Forward to Outside Number: ⓘ

Other Options
Configure the settings and details below

Enable intro prompt: ☒ ⓘ
Play full intro prompt before calling agents: ☒
Intro prompt file: Intro Prompt.wav Add ⓘ
Announce Queue position to caller: ☐ ⓘ
Announcement Interval (seconds): 60 ⓘ
Music on hold: onhold.wav Add ⓘ
Maximum Queue Wait Time (seconds): 1800 ⓘ

Adding a Call Queue

To add a Call Queue:

1. In the 3CX Phone Management console menu, select **“Call Queues” > “Add Queue”** tab.
2. Now enter the call queue options:
 - Virtual extension number – Optionally change the suggested virtual extension number. Note that this extension number will be automatically created. Do not specify an existing extension number.
 - Name – Enter a friendly name for the Queue.
 - Polling strategy – This option allows you to choose how calls should be distributed to agents:
 - Hunt random start – 3CX will randomly choose an agent to distribute the call to. This will evenly distribute the calls to each of the agents.

- Ring All – The phones of ALL the agents will ring.
 - Prioritised Hunt – 3CX will distribute the call according to the order specified in the Queue members section. All calls will go to the first agent first, and only if this agent is busy, it will go to the next agent. This strategy can be used to setup skills based routing, by ordering the agents according to their skills.
3. Ring timeout – Indicate the timeout in seconds, i.e. for how long the phone should keep ringing before it considers the call unanswered by that agent.
 4. In the **“Call Queue agents”** section specify the extensions that should be part of this Call queue. Simply click on the extensions and click on **“Add”** to make them a member. Move the extensions up or down to configure the priority of an extension.
 5. **In addition to being a member, an extension/user must also login to start answering calls routed to this call queue. Users can login to a call queue using the login button in the 3CXPhone or via a schedule using the Office Hours Schedule.**
 6. In the **“Destination if no answer”** section, you can define what should happen if the call does not get answered by an agent. If no agent is logged into the queue, this option gets triggered immediately. In addition, this option gets triggered if the caller presses the “*” button on his phone. This gives callers an option to exit out of the queue and leave a message.
 7. In the **“Other options”** section, you can specify a custom introduction prompt and a custom music on hold file. Introduced in v12.5, you can now choose whether to play the full intro prompt before the system starts to call queue agents. You can also decide whether you wish to announce a caller’s position in the queue and what the maximum wait time should be.

Adding an External Agent to a Queue

Adding an External Agent

3CX Phone System also allows you to add external numbers as agents of a Queue. This is particularly useful in case you want to use a mobile number, a remote extension, or even a VoIP number as an agent of a queue. To add an external agent to a queue:

1. Open your 3CX Management Console and click on the **“Call Queues”** node.
2. Double click the queue that you want to add an external agent to and below the list of queue agents click the **“Add”** button next to **“Add External Agent Number”**.
3. Fill in the external agent’s details (an extension will also be created for the external agent).
4. Click **“OK”** when done and the external agent will be added to your queue.

Advanced Queue Features (Available in PRO Edition)

3CX Phone System Pro Edition adds additional Call Centre like features to 3CX Phone System. No further installation is required – you just purchase the module, reactivate your existing key and the

additional call queue features will become available.

Additional Queue Strategies

With the Pro edition, you have these additional Queue strategies:

- Longest Waiting Time– Will forward a call to the agent who has been waiting the longest for a call.
- Least Talk Time – Will forward the call to the agent with the least total talk time.
- Fewest Answered – Will forward the call to the agent that has answered the least number of calls.
- Hunt by threes prioritized – Will forward the call to the top 3 agents (as configured in the call queue agent section simultaneously).
- Hunt by threes random start – Will send call to 3 random agents simultaneously.
- Round Robin – Will target agents in round robin manner, i.e. first call will be sent to agent 1, the second call to agent 2 and so on.

Additional Queue Options

The screenshot displays the '3CX Phone System Pro Edition Options' window. It is divided into two main sections: 'Queue Options' and 'Queue Email Notifications'.
Queue Options:
- 'Callback Option for this Queue': A dropdown menu set to 'Disabled'.
- 'Callback Outbound Prefix': An empty text field.
- 'Wrap-Up Time (seconds)': A text field containing the value '2'.
- 'Maximum Callers in Queue': A text field containing the value '20'.
- 'Reset Call Statistics for this Queue': A button labeled 'Reset'.
- 'Reset Queue Statistics via schedule': A checked checkbox.
- 'Priority Queue': A checked checkbox.
- 'Give caller ability to opt out of recording (DTMF 3)': A checked checkbox.
- 'Configure SLA Time (seconds)': A text field containing the value '80'.
Queue Email Notifications:
- 'Select queue manager extension number': A button labeled 'Select' followed by the text '100, 102, 105, 107'.
- Four checkboxes are all checked: 'Notify Queue Manager via email when SLA time has been Breached', 'Notify Queue Manager when a Callback is made', 'Notify Queue Manager when a Callback fails', and 'Notify Queue Manager when a Queue call is lost'.
Information icons (i) are present next to several fields and buttons.

Advanced Queue Options

In the PRO edition, you have additional options that you can configure:

- You can enable a Callback option – This allows callers to hang up and get called back when it's their turn. This option requires that you specify an outbound rule to which the configured prefix, matching the rule, is used to trigger the call. The Callback option can be requested by the caller (Option 2) or it can be offered if the timeout of the queue is reached.
- You can specify the wrap up time in seconds – This gives the agent time to enter notes into the call record after taking a call.
- You can specify the maximum number of callers in the queue – When this is reached, the caller will be routed according to the setting in the Destination if no answer section.
- Reset Call Statistics for this Queue – Detailed statistics for the queue, such as average call time, average wait time and so on are visible through the Presence and Queue Monitoring function of 3CXPhone. You can reset the Agent Call Statistics for the Queue by clicking the "Reset" button.

- Call statistics can also be reset automatically using a preconfigured schedule.
- Priority Queue – The administrator can configure this queue as a priority queue. This is useful when the same people are part of two queues, and calls on one of the queues should receive priority over calls in the other queue. E.g. A support team might have one line (and one queue) for normal support calls, and another line (and a different queue) for VIP customers. Both queues are serviced by the same people. The queue for VIP customers will have the “Priority Queue” feature enabled.
- Give Caller ability to opt out of recording: This gives the option to the caller to press DTMF 3 to stop being recorded during a call.
- Queue Notifications – Various notifications can be enabled so that the Queue Manager is notified when certain conditions are encountered, such as the SLA time has been breached, or a call in the Queue has been lost.

Configuring Fax Server

Introduction

3CX Phone System includes a fax server that allows you to receive faxes. The 3CX fax server is based on the T38 standard and requires a compatible supported T38 VoIP gateway or provider. VoIP providers and gateways must be configured according to our configuration guides, so that fax reception is enabled. It is also possible to use a VoIP provider that does not support T38, however the quality of the fax implementation between VoIP providers varies and therefore can not be guaranteed.

Note: This feature is only available in the Standard and Pro Editions of 3CX Phone System.

Fax Receiving Configuration

To receive faxes, you must configure a line or a DID to be dedicated for fax reception, so that all calls on this number are forwarded to the 3CX Fax Server. The 3CX Fax Server will then receive the fax, convert it to PDF and email the fax to the configured email address.

The screenshot shows the 'Number/Mask' configuration window in the 3CX management console. It is divided into three main sections: 'Number/Mask', 'Apply this rule to these ports', and 'Office Hours'.

- Number/Mask:** Contains a dropdown for 'Inbound Rule type' set to 'DID/DDI number/mask' and a text field for 'DID/DDI number/mask' containing '2000'. Both have information icons.
- Apply this rule to these ports:** Contains a dropdown for 'Available ports' with two options: 'Generic' (unchecked) and 'ISDN' (checked). It has an information icon.
- Office Hours:** Contains a section for 'Configure where calls to this DID/DDI should be routed during office hours.' with several radio button options: 'End Call', 'Connect to Extension', 'Connect to Queue / Ring Group', 'Connect to Digital Receptionist', 'Voicemail box for Extension', 'Forward to Outside Number', and 'Send fax to' (which is selected). To the right of these options are dropdown menus for each, with values like '120 Dave Chapelle', '802 802RingHunt', '800 800ExchangeDR', '100 Gareth James', and 'FAX device 890'. Below these are checkboxes for 'Set up Specific Office Hours' and 'Include holidays'. At the bottom of this section is a button labeled 'Set up Specific Office Hours'.

At the bottom of the window, there are two checkboxes: 'Apply the same routing logic Outside of office hours' (checked) and 'Play Holiday Prompt on Public Holiday' (unchecked). At the very bottom are 'OK', 'Cancel', and 'Apply' buttons.

Configuring a Port or DID to Receive a Fax

To do this:

1. In the 3CX Management console, select the Inbound rule for the port or DID which will be dedicated to receiving faxes.
2. From the “**Office hours**” routing options, select “**Send fax to email of extension**”.
3. Select the extension that should receive incoming faxes. If you select “**Default Email Address**”, incoming faxes will be sent to the email address configured for the virtual fax

extension number. You can configure the email address of the default virtual fax extension from the **“Fax Machines”** node > **“888” – 3CX Fax Server**.

4. Alternatively you can forward incoming faxes to the email address configured for a user's extension. This allows you to create multiple DID rules and give personal fax numbers.

Configuring Fax Machines / Fax Servers

The **“Fax machines”** node in the management console lists all known **“Fax extensions”** including the extension used by the 3CX Fax Server. These **“Fax extensions”** are similar to a normal extension and require an authentication ID and password to login to the SIP server.

3CX Phone System included a pre-configured fax extension (ext: 888). This extension is used by the 3CX Fax Server for incoming fax calls, which will then be routed to an email address. In addition, 3CX Phone System can be configured to proxy fax calls (T38 traffic) to a fax machine connected to an ATA or another software based T38 fax server, by creating additional fax extension.

Fax Extension Settings



Fax Extension

To create a new fax extension:

1. In the 3CX Management Console ,select **“Fax machines”** > **“Add Fax Extension”**.
2. In the **“Fax Server Extension Number”** field, specify the fax extension number. Any calls forwarded to this extension will be assumed to be a fax and receive a fax tone.
3. Specify the Fax Server Authentication ID and Password – These credentials will be used by the ATA / 3rd party fax server to login to the 3CX Phone System.
4. If this extension is used by the 3CX Fax Server, you can specify the default email address to which all faxes should be sent.
5. If this extension is used for an ATA or 3rd party T38 fax software, the extension will be used only to register to the SIP server and receive T38 fax traffic. **Note:** You must restart the fax service for changes to take effect.

Connecting Fax Machines Using an ATA

Once you have configured the fax extension you must connect the fax machine to a supported ATA device and configure the ATA device to connect to the fax extension. See this link for a step by step guide: <http://www.3cx.com/docs/configure-fax-machine-with-3cx/>

Configuring Web & Call Conferencing

Introduction

Call conferencing allows you to easily configure up to eight conference calls that can allow a total of 64 callers (license permitting). The 64 caller limit is for all conferences, not per conference. Although many conference call services exist, it's often easier and cheaper to host your own audio conferences. To simplify the set-up of conference calls, conferences can be set-up ad hoc, without the need to reserve a conference room.

3CX WebMeeting

In addition to standard voice conferencing, 3CX Phone System also has an advanced web / video conferencing feature called 3CX WebMeeting. This is a separately licensed service based on the number of concurrent participants you wish to host. More information can be found here:

[3CX WebMeeting](#)

Call Conferencing

Configuring Conferencing

1. In the 3CX Management Console, go to **"Settings" > "Advanced" node** and click on the **"Conferencing" tab**.
2. Now specify the conferencing extension number. This is the number that users must call to setup a conference.
3. Specify whether you wish to require a PIN to create a conference. If you enable this, users that **create** a conference must enter this conference PIN, after the Conference ID. The PIN will be used automatically when a user creates the conference via 3CXPhone.

Creating a Conference Call

Conference calls can be created using one of the following methods:

1. From 3CXPhone, the user can create an ad hoc conference. For more information how to do this see the online user manual:
 - 3CXPhone for Windows & Mac: <http://www.3cx.com/user-manual/call-conference/>
 - 3CXPhone for Android: <http://www.3cx.com/user-manual/call-conference-android/>
 - 3CXPhone for iOS: <http://www.3cx.com/user-manual/call-conference-iphone/>
2. From the Conference section in 3CXPhone, the user can also schedule conference calls to occur in the future. Users will receive an email with the conference call details. External users need to be notified by the user.
3. Users can create conference calls using their IP Phone. They will need to dial the Conference Extension number (700) by default, and follow the prompts.

For information how to create a conference call, see this page of the online user manual: <http://www.3cx.com/blog/voip-howto/create-conference-using-desk-phone/>

Web Conferencing

Requires Standard or Pro Edition

3CX Phone System has a powerful video conferencing feature called 3CX WebMeeting. By default you can host video conferences for up to 10 participants, included with every Standard or Pro

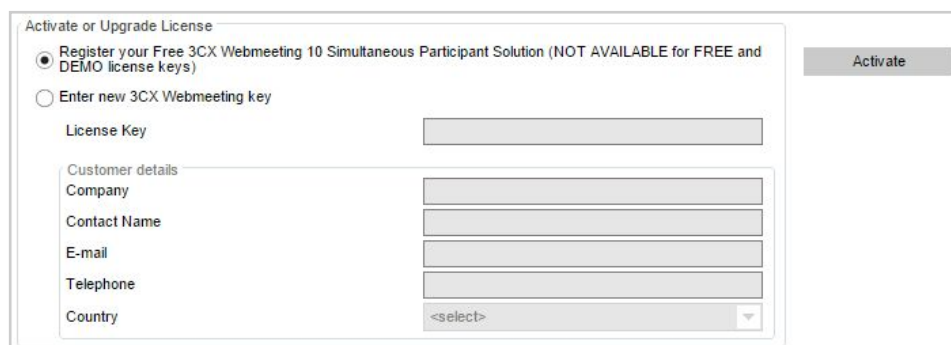
Licence. You can license additional participants if you wish. More information on how to obtain a license key and pricing can be found here: <http://www.3cx.com/ordering/pricing/webmeeting/>

Configuring 3CX WebMeeting

Follow these steps to configure 3CX WebMeeting on your phone system:

Step 1 - Enable the 3CX WebMeeting feature

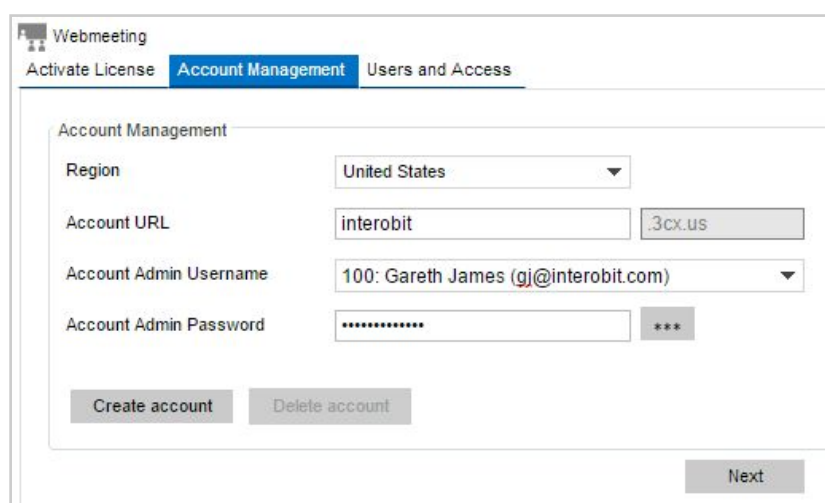
3CX WebMeeting requires 3CX Phone System Version 12 SP5 or later.



1. Navigate to **“Settings” > “WebMeeting”**.
2. Select whether you will use 3CX WebMeeting for up to 10 participants (included with every 3CX Phone System license) or whether you will buy a 3CX WebMeeting license to get more participants. In this case enter your license key.
3. Enter your company details.
4. Click **“Activate”**.

Step 2 - Create your 3CX WebMeeting Account

A 3CX WebMeeting portal, hosted on our 3CX WebMeeting Servers, is required so you can start creating meetings.



To create an account:

1. Switch to the **“Account Management”** tab (After activating the license).
2. Select the Region that applies to you.
3. Enter your URL. Normally the company name. This URL will be shown in the meeting invites, i.e. the link that users will click on.
4. Select the extension user that is the administrator. Choose this correctly because this cannot be changed later.

5. Enter a password for the admin. Choose this correctly because this cannot be changed.
6. Click the **“Create Account”** button. An account will be created and dedicated to your organization.

Step 3 - Add users to your 3CX WebMeeting account

Now you can create user accounts on your portal so they are able to create WebMeetings.

The screenshot shows the 'Webmeeting' portal with the 'Users and Access' tab selected. On the left, a list of users is available for selection, including Gareth James, Home MT EXT, Maria Johnson, Nick iHome, Dexter Morgan, Emily White, Lia Caren, Nicholas Kirk, Terence Black, Sandy Martin, Shana TwainGV, Kurt Seiger, Monique Ferrara, Samantha Hunt, George Georgeou, Elizabeth Papas, Stacey Mitchel, Ken Jones, and Clint Bartholomew. An 'Add >' button is positioned between the two lists. On the right, a table displays the status of selected users:

Account Status	Extension	Email	Name	Is Account Admin
Active	104	nb@3cx.de	Jonas Fung	NO
Active	107	nb@3cx.nl	Ricky Dellinger	NO
Active	120	nb@3cx.jp	Dave Chapelle	YES

At the bottom, a 'Bulk User Configuration' section shows 'Set selected group of users to' with a dropdown menu set to 'Active' and a 'Go' button.

1. Click on the **“Users and Access”** tab.
2. The column on the left shows all available extensions inside 3CX Phone System. Select a user and click the **“Add >”** button to create user accounts in your portal. Each extension user that is moved to the right will be able to organize WebMeetings.
3. Click **“Save”**. Accounts will be created for the selected users.

Organizing WebMeetings from 3CXPhone

The users that have a WebMeeting user account created, are now able to organize and schedule WebMeeting sessions. All this can be done from within 3CXPhone. Start 3CXPhone for Windows or Mac and click on the **“Conference”** tab in the bottom operations toolbar.

Two new options will be visible at this point: “Create WebMeeting” and “Scheduled WebMeetings”. More information on how to host and organize WebMeetings can be found here:

<http://www.3cx.com/user-manual/hosting-web-conference/>

Delegating 3CX Management Console Access

Introduction

3CX Phone System allows you to delegate access to the 3CX Management Console. This enables a 3CX Phone System Administrator to share managerial tasks with department heads, or allow an IT Administrator to manage the company's extensions. The level of access can be adjusted depending on what each user needs to have access to. Managerial tasks can now be delegated and divided between a group of individuals, rather than one administrator, allowing the 3CX Phone System to be managed more efficiently.

Configuring Extension Access Permissions

To configure an extension's Management Console access,

1. From the 3CX Management Console, Select **"Extensions"** node.
2. Select the extension you want to allow access to and click **"Edit extension"**.
3. Switch to the **"Options"** tab and set a 3CX Web Access password. (provide it to the user of that extension).

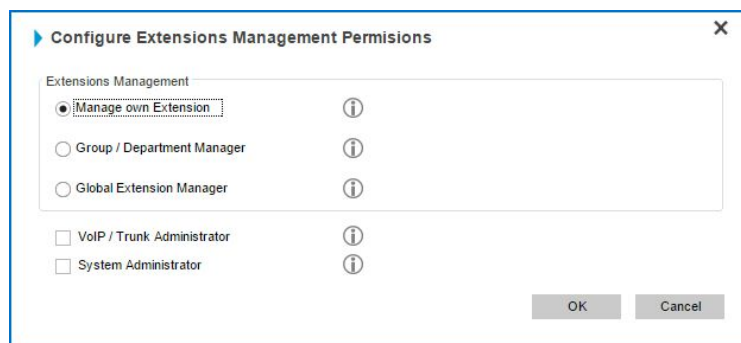
The user can then login into the 3CX Management Console using their extension number as the username and the password you set in the previous step.

The following sections are a number of sample use cases that outline how to configure 3CX Phone System for each case:

Use Case 1: Allow Power Users to Manage their own Extensions

Power users can be allowed access to the management console to configure their extensions parameters, such as edit their voicemail PIN number and configure their email notifications. To do this:

1. From the **"Options"** tab, check the **"Allow 3CX Management Console Access"** checkbox.
2. Click the **"Configure Permissions"** button.



3. From the dialog window choose **"Manage own Extension"** and click **"OK"**.
4. Click **"Apply"** to save Changes.

By allowing a user to manage his/her own extension, the user can:

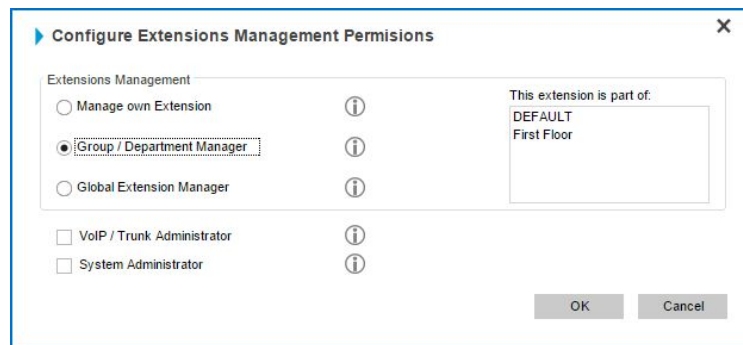
- Edit their email address and mobile phone number.
- Configure voicemail options such as disable PIN authentication to listen to messages, or edit PIN number.
- Configure email notifications such as whether to receive voicemails as email attachments and receive email notification on missed calls.

- Configure voicemail greetings.

Use Case 2: Allow Department Heads to Manage their Departments Extensions

Department heads can be allowed to manage users in their department. This allows the head of a call center for example, to control which extensions are allowed to make external calls, or enable/disable the recording of calls. To give access to a department head:

1. From the “**Options**” tab, check the “**Allow 3CX Management Console Access**” checkbox.
2. Click the “**Configure Permissions**” button.



3. From the dialog window choose “**Group / Department Manager**” and click “**OK**”.
4. Click “**Apply**” to save Changes.

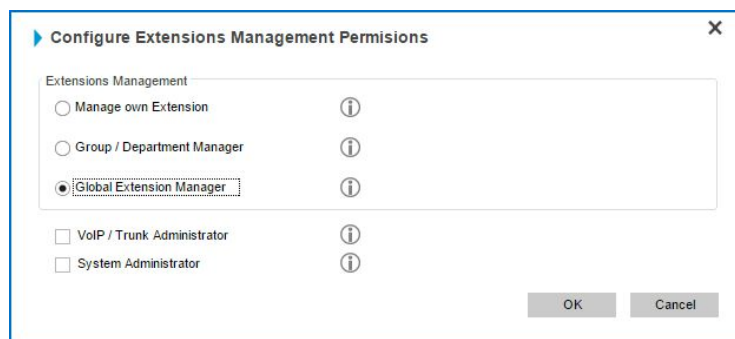
By allowing Group / Department Manager access, the user can:

- Create and edit and manage extensions within the extension group(s) that he/she belongs to.
- Control which extensions are allowed to make external calls.
- Enable/disable the recording of calls.
- Log in/out agents from Queues.
- Configure forwarding rules for extensions.

Use Case 3: Allow Access to an IT Administrator to Manage Company Extensions

A company’s IT administrator can be given access to create and manage his company’s extensions. This is especially useful in a hosted server environment where the System Administrator is in charge of updates and system settings, and day-to-day extension management is delegated to the IT administrator. To do this:

1. From the “**Options**” tab, check the “**Allow 3CX Management Console Access**” checkbox.
2. Click the “**Configure Permissions**” button.



3. From the dialog window choose “**Global Extension Manager**” and click “**OK**”.
4. Click “**Apply**” to save Changes.

By allowing Global Extension Manager access, the user can:

- Create and edit and manage extensions. Includes all the points from the previous use cases.
- Create and edit and manage extension groups.

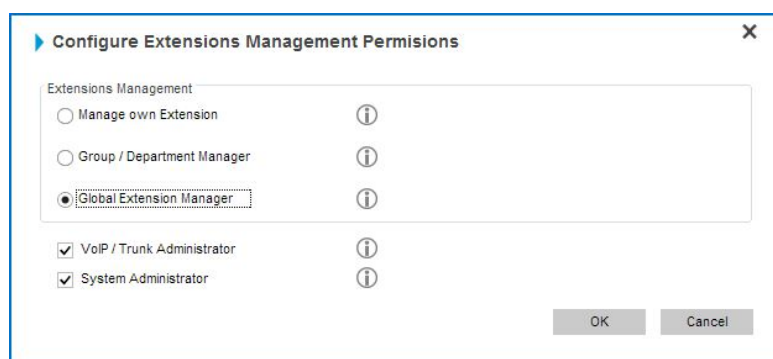
Use Case 4: Access to VoIP/Trunks and System Administrator

In addition to managing his company's extensions, the IT administrator can be given access to add/edit VoIP/Trunks and be given System Administrator access. Access to these two options can be given independently of each other.

- Users with access to "VoIP / Trunk" can configure VoIP Gateways, VoIP Providers and 3CX Phone System Bridges.
- Users with "System Administrator" access can modify system extensions (Queues, Ring Groups, Digital Receptionists), and also have access to Settings and Updates.

To enable access to these options:

1. From the "**Options**" tab, check the "**Allow 3CX Management Console Access**" checkbox.
2. Click the "**Configure Permissions**" button.



3. From the dialog window check "**VoIP / Trunk Administrator**" and/or "**System Administrator**", click "**OK**".
4. Click "**Apply**" to save Changes.

By allowing access to VoIP/Trunks and System Administration, the user can:

- Configure VoIP Gateways, VoIP Providers and 3CX Phone System Bridges (VoIP / Trunk).
- Modify system extensions: Queues, Ring Groups, Digital Receptionists (Sys Admin).
- Access to the System node, where Network, Security, General and Advanced settings reside (Sys Admin).
- Access and perform system updates (Sys Admin).

Connecting 3CX Phone Systems (Bridges)

Introduction

You can connect two separate 3CX Phone Systems together, allowing you to make calls between branch offices using your internet connection for free.

A “Bridge” can be assigned a prefix, which users will dial to access the other 3CX Phone System. This prefix must be followed by the extension number they wish to reach on the other 3CX Phone System. For example, if you assign the prefix “5” to a bridge with another office, and within your office you want to dial someone who has extension number 105 in the other office, you would dial 5105 to reach that person directly.


Alternatively, you can assign the extensions in one office to start with one number (e.g. 1), and the extension in the second office to start with a different number (e.g. 2 and 3). That way, the users do not need to dial a prefix, since the PBX will route the call based on the first digit of the number they are calling. In this case, the outbound rule (with prefix 1 and 2), should not remove (Strip) any digit.

Note: This feature requires Standard or Pro edition.

Creating a Bridge

Each bridge must have a “Master” and a “Slave” Phone System. The Slave Phone system registers with the Master Phone System. To create a bridge you must first setup the “Master” Phone System and then the “Slave” Phone System.

Step 1: Create a Bridge on the Master Phone System

 A Bridge allows you to connect two 3CX Phone Systems, and make free calls between offices.

General

Enter Virtual Extension Number and name of this bridge

Virtual extension number

10021

i

Name of bridge

London-New York

i

Type of Bridge

Configure whether this bridge should be master, slave or use the tunnel.

Type of 3CX Bridge

Master (Direct-UDP)

i

Outbound rule prefix to reach remote 3CX PBX

6

i

Bridge Selected: Master (Direct-UDP)

This 'Master' Bridge will receive registrations. The other PBX must register with this system. In Direct (UDP) mode, all traffic will be sent via UDP and will use multiple ports.

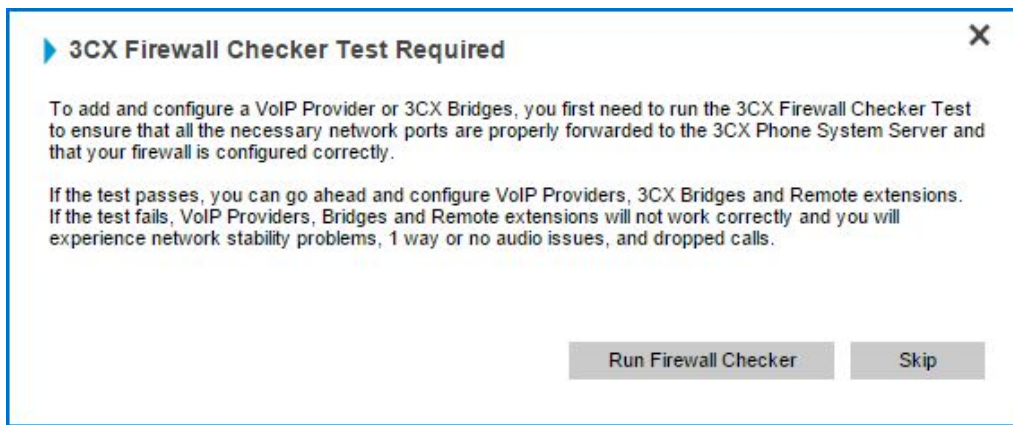
Authentication Password

ct8bvhq1

i

Creating a Master Bridge

1. In the management console of the “Master” 3CX Phone System, Select the “**Bridges**” node > “**Add Bridge**”.



2. The 3CX Phone System will prompt you to conduct a firewall test (<http://www.3cx.com/blog/docs/firewall-checker/>). Click “**Run Firewall Checker**”, and after successfully completing the test, return to the “**Add Bridge**” page.
3. Enter a name for the bridge and assign a virtual extension number. This will be the number it will be addressed by. Accept the default or choose another extension that is free. The virtual extension number will also be used as the Authentication ID, so the virtual extension chosen should be available and the **SAME on BOTH** 3CX Phone Systems.
4. Now select the Type of bridge:
 - Master (Direct - UDP) - In Direct - UDP mode, all traffic will be sent via UDP and will use multiple ports.
 - Master (Tunnel - TCP) - The tunnel option allows all SIP and RTP traffic to be sent via a single TCP port. The 3CX Tunnel vastly simplifies firewall configuration, although it cannot provide the same quality as a direct connection. Also, the tunnel option can only be used with another 3CX Phone System.
5. If you selected “Master (Direct-UDP)”, enter the authentication password, which together with the Virtual extension number must be used by the slave to register with this 3CX Phone System. The Virtual extension number must be UNIQUE on this phone system and these same credentials must be used by the “Slave” 3CX Phone System.
6. If you selected “Master (Tunnel-TCP)” then you must enter:
 - Authentication Password – The password that will be used for authentication.
 - Remote end of the tunnel – Enter the public IP of the Slave 3CX Phone System machine.
 - Enter the remote port of the 3CX Tunnel (by default 5090).
 - Enter the port of the LOCAL end of Tunnel. For the first bridge connection it is 5081 (5080 is used for external extensions). The port will be incremented by 1 for each bridge you create that uses the tunnel. **You will have to forward TCP and UDP port 5090 on the firewall behind which the “Master” 3CX Phone System resides.**
7. Specify a prefix to be used for this bridge. I.e. if you specify 5, then a user must dial 5100 to reach extension 100 on the other 3CX Phone System.
8. Select if you want to publish and receive presence information from the other 3CX Phone System. Publish Information is available in Standard and Pro. Receive information is available only in Pro edition license.
9. Select the users that are able to see this remote connection from within 3CXPhone for Windows.
10. Accept all other defaults and click “Next” to create the bridge.

Step 2: Create a Bridge on the Slave Phone System

General	
Enter Virtual Extension Number and name of this bridge	
Virtual extension number	10021 ⓘ
Name of bridge	New York-London ⓘ
Type of Bridge	
Configure whether this bridge should be master, slave or use the tunnel.	
Type of 3CX Bridge	Slave (Direct-UDP) ⓘ
Outbound rule prefix to reach remote 3CX PBX	5 ⓘ
Bridge Selected: Slave (Direct-UDP)	
This 'Slave' Bridge will register with the remote system. In Direct (UDP) mode, all traffic will be sent via UDP and will use multiple ports.	
Remote end of Bridge/Tunnel (Public IP of Remote 3CX)	212.45.11.44 ⓘ
Authentication Password	ct8bvhq1 ⓘ
Time between registration attempts (in seconds)	60 ⓘ
Port	5060 ⓘ

Configuring a Slave Bridge

General	
Enter Virtual Extension Number and name of this bridge	
Virtual extension number	10021 ⓘ
Name of bridge	New York-London ⓘ
Type of Bridge	
Configure whether this bridge should be master, slave or use the tunnel.	
Type of 3CX Bridge	Slave (Tunnel-TCP) ⓘ
Outbound rule prefix to reach remote 3CX PBX	5 ⓘ
Bridge Selected: Slave (Tunnel-TCP)	
This 'Slave' Tunnel will register with the remote system using the 3CX tunnel. The tunnel option allows all SIP and RTP traffic to be sent via a single TCP port.	
Local IP or Hostname of remote 3CX Phone System	192.168.1.5 ⓘ
Remote end of Bridge/Tunnel (Public IP of Remote 3CX)	212.45.11.44 ⓘ
Local end of Tunnel	10.172.0.15 ⓘ
Authentication Password	ct8bvhq1 ⓘ
Time between registration attempts (in seconds)	60 ⓘ
Port	5060 ⓘ
Port	5090 ⓘ
Port	5083 ⓘ

Slave Bridge Using the 3CX Tunnel

1. In the management console of the "Slave" 3CX phone System, Select the **"Bridges"** node > **"Add Bridge"**.
2. Enter a name for the bridge and assign a virtual extension number. This virtual extension number must be the **SAME** one used on the "Master" Phone System!
3. If you select to create a slave bridge using direct UDP, then you must enter:
 - Public IP of the "Master" 3CX Phone System
 - SIP Port of the "Master" 3CX Phone System (by default 5060)
 - Authentication Password – The password set on the Master Phone System.
4. If you select to create a Slave using the (Tunnel-TCP), then you must enter:
 - Local IP of remote 3CX Phone System and port.
 - Remote end of Bridge/Tunnel - Enter the public IP and port of the **'Master'** 3CX Phone System machine (by default port is 5090).
 - Configure the port for the local end of the tunnel (5081 by default). If you have multiple network cards select the IP of the card connecting to the Master Phone System.
 - Authentication Password – This will be used to authenticate with the **'Master'**. This must match the credentials entered on the master. **You will have to forward TCP and UDP port 5090 on the firewall to the "Slave" 3CX Phone System.**
5. Specify a prefix to be used for this bridge. I.e. if you specify 5, then a user must dial 5100 to

reach extension 100 on the other 3CX Phone System.

6. Select if you want to publish and receive presence information from the other 3CX Phone System. Publish Information is available in Standard and Pro. Receive information is available only in Pro edition license.
7. Select the users that are able to see this remote connection from within 3CXPhone for Windows.
8. Accept all other defaults and click "Next" to create the bridge.

Calling a Party on the Other End of the Bridge

To dial a number on the other end of the bridge, you must dial the assigned prefix, plus the number of the person you wish to call. For example dial 5100 to reach extension 100 on a remote phone system. The number 5 would be the prefix assigned to the bridge to reach that remote phone system.

The Phonebook / Directory Service

Introduction

The phonebook feature allows you to easily publish a companywide phonebook. Used in tandem with a personal phonebook, it allows users to quickly launch calls without wasting time finding a contact's number and subsequently entering it in the phone.



First Name	Last Name	Mobile	Company	Mobile 2	Home	Home 2	Business	Business 2	Email Address	Other
Andrew	Shaw		Wise Appraisals				7187942416		andrewshaw@wiseappraisals.com	
Blanca	Pringle		Exact Solutions				2247654712		blancaapringle@exactolutions.com	
Carey	Gale		Rich and Happy				6603351464		carey@richandhappy.com	
Carlos	Collins		Merry-Go-Round				3212827625		carlosacollins@merry-go-round.com	
Christopher	Aguilar		Stratagee				5806138461		christopherbagular@stratagee.com	
Christopher	Cheatham		Sofa Express				3156889671		christophercheatham@sofaexpress.com	
Dan	Talley		Blue Boar Cafeterias				5106553267		dan@blueboarcafeterias.com	
Darryl	Harris		Bresler's				8149412303		darrylharris@breslers.com	
Diana	Muhnhill		Packer				2063869394		dianamuhnhill@packer.com	
Don	Gurganus		Alert Alarm Company				2535304906		dongurganus@alertalarm.com	
Emily	Ford		A. L. Price				6306691986		emilyford@alprice.com	
Emmet	S. Sutton		Big Selections				5009176077		emmettsutton@bigselections.com	
Eva	Tudor		Quality Event Planner				3048336919		evatudor@qualityeventplanner.com	
Glen	McMunn		Computer City				3135651212		glenmcmunn@computer-city.com	
Helen	Tompkins		Super Shops				3303797896		helen@supershops.com	
Hima	Edwards		Full Color				4696437841		himaedwards@fulcolor.com	
Howard	Cuccia		Shoe Kicks				2127710072		howardcuccia@shoekicks.com	
Ian	Miles		Lionel Playworld				8705153159		ianmiles@lionelplayworld.com	
Jacqueline	Krause		Jourapide				2547545697		jacquelinekrause@jourapide.com	
James	Conklin		House Of Denmark				6198710413		jamesconklin@houseofdenmark.com	
Jeannie	Shultz		Circuit City				8165316499		jeannieshultz@circuitcity.com	
Joe	Scott		Desert Garden Help				5024556109		joescott@desertgardenhelp.com	
Joel	Niehaus		Quality Merchant Services				8177448301		joelniehaus@qualitymerchantservices.com	
John	Click		dayrep				8046120482		john@dayrep.com	
John	Hudgins		Madcats Music & Books				8454377669		john@madcatsmusicbooks.com	
Kenton	Kehoe		Nickerson Farms				9728722878		kentongkehoe@nickersonfarms.com	
Lilan	Malone		MacMarr Stores				3367983609		lilamalone@macmarrstores.com	
Linda	Stoehr		Dream Home Real Estate Service				6603530589		linda@dreamhomerealestate.com	
Margaret	Almaraz		Joshua Doore				8139978540		margaret@joshuadoore.com	
Marilyn	Hughes		Opticomp				2069356544		marilyn@opticomp.com	
Michael	Volkman		Pap 'N' Taco				8153516436		michael@papntaco.com	
Minnie	Duckner		Chi-Chi's				4016837268		minnie@chichis.com	
Natalie	Fabian		Sistemas				3018261354		natalee@fabian.com	
Otto	Miller		Old America Stores				5407932255		ottomiller@oldamericastores.com	
Patricia	George		Elector				2607604361		patricia@elector.com	
Ralph	Gunderson		De Pinna				3107149750		ralph@drummond.com	
Richard	Drumheller		Smitty's Marketplace				7023995553		richard@drumheller.com	
Ronnie	Noguera		Coffee's Market				5125375753		ronnie@coffeesmarket.com	
Roy	Shaw		McDades				5303237966		roy@shaw.com	
Sam	Bryce		W. Bell & Co.				9014812476		sambryce@wbells.com	

The Company Phone Book

3CX Phone System supports a company and a personal phonebook. The Company phonebook is company wide and is managed from the management console. The personal phonebook is only available to a particular extension and is managed from 3CXPhone on that extension.

Synchronise Phonebook to your IP Phones

The company phonebook is also published to a directory in a format that Cisco, Fanvil, Htek, Polycom, snom, and Yealink phones can download. These phones can then show the same phonebook on their display.

Resolves Caller ID to Name

One of the most important features of the phonebook is that incoming caller IDs are searched against the phonebook, and if a match is found, the caller's name is shown in the caller ID rather than just showing the number.

To manage the company phonebook, go to the **“Settings” > “Company Phonebook”** node. Click **“Add”** to add an entry.

Importing & Exporting Phonebook Entries

You can import phonebook entries from a CSV file. Each entry should be on a new line, and the fields separated by a comma as follows: “First name, Last name, Phone number”. To import the company phonebook entries into your 3CX Phone System do the following:

1. Log into the 3CX Management console and click on the **“Settings”** node.
2. Click on **“Company Phonebook”** and select **“Import”**.
3. Browse to your saved CSV file, select it and click **“Open”**.
4. Your Company Phonebook entries will be imported into 3CX.

You can download a sample Phonebook import file from here:

<http://downloads.3cx.com/downloads/misc/ImportCompanyPhonebookSampleV125.csv>

You can export your phonebook entries from the Company Phonebook in order to save them as a backup or for modify them and import them back at a later stage. To export your phonebook entries follow these steps:

1. Log into the 3CX Management Console and click on the **“Settings”** node.
2. Click on **“Company Phonebook”** and click the **“Export”** button.
3. Select a file location and a file name for your CSV file.
4. Click **“Save”** to export and save your Company Phonebook.

Using the Phonebook

To use the phonebook, users enter a name or part of the name in the search box in 3CXPhone Phonebook. 3CXPhone will automatically resolve the name or part of the name to a phonebook entry. To launch a call, the user just double-clicks the name and clicks the “Call” button.

Synchronising with Exchange Server

Note: Requires 3CX Pro edition.

The Exchange Connector allows you to connect the 3CX Phonebook with Microsoft Exchange Server 2007, 2010, 2010 SP1, 2013, and Office 365 (with Exchange) to import Exchange contacts to either the company or the personal phonebook. The following import functions are available:

- Import Global Address List (GAL) into the 3CX Company Phonebook.
- Ability to select a public folder of contacts to be imported into the 3CX company phonebook.
- Ability to import personal contacts from one or more Exchange users and import them to their personal 3CX Phonebook.

How it Works

The 3CX Exchange Connector will connect to Microsoft Exchange Server via an “impersonated user” and import all the contacts. Then, at a specified interval, the connector will login to the Exchange Server and check if there are any new contacts or if any contacts have been deleted. If contacts have been deleted, these will be deleted in the 3CX Phonebook. If contacts have been added they will be imported.

IMPORTANT: The 3CX Connector will sync Exchange to 3CX. Changes are one way, any changes made to that particular contact in the 3CX Phonebook will NOT be updated in Exchange Server!

Configuring the Exchange Connector (MS Exchange Sync)

In order to configure your 3CX Phone System to work and synchronize with Microsoft Exchange using the 3CX Exchange Connector, you will first need to create the impersonated Microsoft Exchange user account. Instructions on how to do this can be found here:

<http://www.3cx.com/blog/docs/how-to-create-impersonated-user>.

After you have created your impersonated account you may continue and configure the 3CX Exchange Connector by following these steps:

Configure advanced settings such as conferencing and more

Advanced Dial codes MS Exchange **Company Directory Sync** Conferencing Call Parking Custom Parameters Billing Information CDR Output

MS Exchange Sync LDAP Directory Search ODBC Search

Synchronize contacts from Microsoft Exchange - Requires 3CX PRO License

OWA Link of MS Exchange Server

Impersonated User Account [Click here for more info](#)

User Account Password

Email Addresses to Synchronize

☒ sw@cyprus.local (100)

Enable Calendar Profile Switching ☐ [Click here for more info](#)

Configure Public Folders to Synchronize

1. Log in to your 3CX Management Console and click on the **“Settings”** node. Then select **“Advanced”** and click the **“Company Directory Sync”** tab
2. Fill in the following fields:
 - FULL FQDN to OWA of the Microsoft Exchange Server. Exchange 365 users will need to use their OWA link.
 - Insert your impersonated account details in the **“Impersonated User Account”** and **“User Account Password”** fields.
3. Select the email address and the public folders that you want synchronized and click **“Apply”**.
4. To check if your Exchange contacts have been synchronized with the 3CX Phone System Company Phonebook go to **“Settings”** and then select **“Company Phonebook”**.
5. You should see a list of contacts in the 3CX Company Phonebook imported from the email address that you selected to synchronize.

Note: You cannot delete any contacts synchronized through MS Exchange from your Company Phonebook. The contacts need to be deleted from Exchange first and the 3CX Company Phonebook will be updated automatically.

Enabling Exchange Calendar Profile Switching

After having successfully configured MS Exchange Sync, you can take advantage of the ability to automatically change your extension status, based on your status in the Outlook calendar. If you have scheduled appointments where your “Show As” status is set to “Working Elsewhere” or “Out Of Office”, then you status in the 3CX Phone System will automatically change to the “Away” or “Out Of Office” status respectively.

To enable this feature, select **“Settings”** > **“Advanced”** > **“Company Directory Sync”** > **“MS Exchange Sync”** and check the **“Enable Calendar Profile Switching”** checkbox.

Detailed instructions can be found here: <http://www.3cx.com/docs/exchange-calendar-status-synchronization/>

Configuring the LDAP Directory Search

Note: Requires 3CX Pro edition.

LDAP (Lightweight Directory Access Protocol) Directory Search has the ability to connect with an

external directory database, for instance your companies active directory, or an external internet based phone directory service. When an incoming call is received, the 3CX Phone System can access LDAP and look for a contact match. If a match is found, the contact will be automatically added to the 3CX Company Phonebook and the contact information will be displayed each time that contact calls.

Configure advanced settings such as conferencing and more

Advanced | Dial codes | MS Exchange | **Company Directory Sync** | Conferencing | Call Parking | Custom Parameters | Billing Information | CDR Output

MS Exchange Sync | **LDAP Directory Search** | ODBC Search

LDAP Directory Search

LDAP Server (FQDN)

LDAP Server Port

LDAP User

LDAP User Password

Search Base

TTL in Days

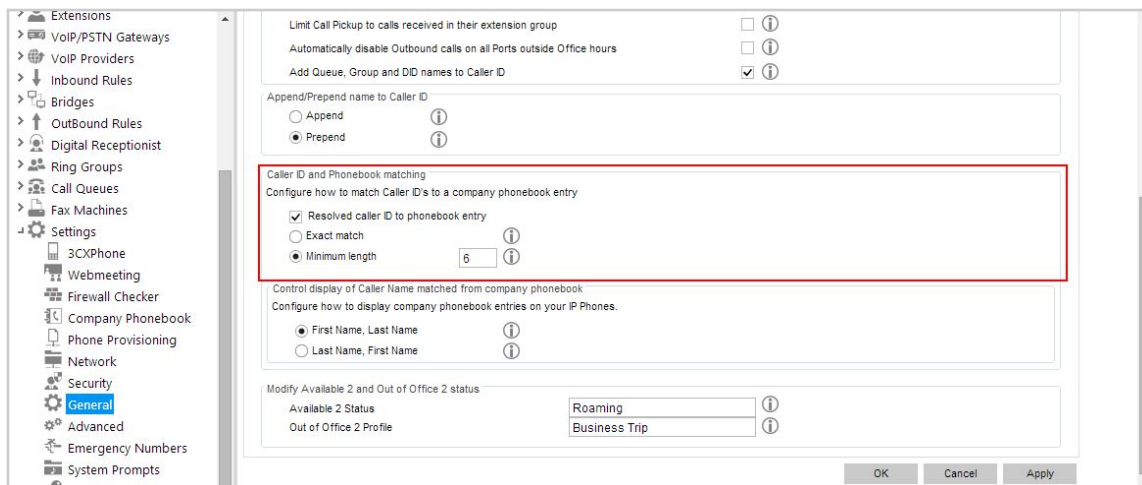
Clear all LDAP Entries

To Configure LDAP (Lightweight Directory Access Protocol) with 3CX Phone System:

1. Log in to the 3CX Management Console and click on the **“Settings”** node.
2. Click on **“Advanced”** and click on **“Company Directory Sync”**.
3. Select **“LDAP Directory Search”**:
 - Fill in the LDAP server IP address or FQDN as in the example above.
 - Insert the LDAP server port number.
 - Insert the LDAP User name and User Password.
 - Specify your LDAP search base. In this example we used “OU=3CX Contacts,DC=cyprus,DC=com” which means that the LDAP search will take place in the 3CX Contacts container in the “cyprus.com” domain. Taking that in consideration you need to specify your search base according to your LDAP configuration.
 - Add a number of days that the System will wait before removing contacts.

First Name	Last Name	Mobile	Company	Mobile 2	Home	Home 2	Business	Business 2	Email Address	Other
Andrew	Shaw		Wise Appraisals				7187942416		andrewshaw@wiseappraisals.com	
Blanca	Pringle		Exact Solutions				2247654712		blancaaprinle@exactsolutions.com	
Carey	Gale		Rich and Happy				6603351464		carey@richandhappy.com	
Carlos	Collins		Merry-Go-Round				3212627825		carlosacollins@merry-go-round.com	
Christopher	Aguilar		Stratagee				5068139461		christopheraguilar@stratagee.com	
Christopher	Cheatham		Soft Express				3156899671		christophercheatham@softexpress.com	
Dan	Talley		Blue Bow Cafeterias				5106553267		dantalley@bluebowcafeterias.com	
Darryl	Harris		Bresler's				8149412303		darrylharris@breslers.com	
Diana	Muhle		Packer				2063869394		dianamuhle@packer.com	
Don	Gurganus		Alert Alarm Company				2535304006		dongurganus@alertalarm.com	
Emily	Ford		A. L. Price				6306681986		emilyford@alprice.com	
Ethel	S. Sutton		BlogSelections				5808176077		ethelsutton@blogselections.com	
Eva	Tudor		Quality Event Planner				3048336919		evantudor@qualityeventplanner.com	
Glenn	McMunn		Computer City				3135651212		glennmcmunn@computercity.com	
Helen	Tompkins		Super Shops				3303797886		helen@tomptkins@supershops.com	
Hilma	Edwards		Full Color				4696437841		hilmaedwards@fullcolor.com	
Howard	Cuccia		Shoe Kicks				2127710072		howardcuccia@shoekick.com	
Ian	Miles		Lionel Playworld				8705153159		ianmiles@lionelplayworld.com	
Jacqueline	Krause		Jourapide				2547545697		jacquelinekrause@jourapide.com	
James	Conklin		House Of Denmark				6198710413		jamesconklin@houseofdenmark.com	
Jeannie	Stultz		Circuit City				8165316499		jeanniestultz@circuitcity.com	
Joe	Scott		Desert Garden Help				5024556109		joescott@desertgardenhelp.com	
Joel	Niehaus		Quality Merchant Services				8177448301		joelniehaus@qualitymerchantservices.com	
John	Click		dayrep				8046120482		john@dayrep.com	
John	Hudgins		Madcats Music & Books				8454377669		john@hudgins@madcatsmusicbooks.com	
Kenton	Kehoe		Nickerson Farms				9728722876		kentongkehoe@nickersonfarms.com	
Lillian	Malone		MacMarr Stores				3367983609		lillianmalone@macmarrstores.com	

4. When a you receive a call, the Company Directory Manager service (which monitors all calls) will search for a match in the the company phonebook. If a match is not found then it will search the LDAP Server, if a match for the contact is found, then it will be added it to your Company Phonebook directly as shown above.



5. To clear all LDAP Entries from your Company Phonebook go to **“Settings” > “Advanced” > “Company Directory Sync” > “LDAP Directory Search”** > Click on the **“Clear all LDAP entries”** button.

Important! In order for the Company Directory and LDAP search to work correctly you need to make sure that Caller ID and Phonebook matching is enabled in **“Settings” > “General” > “Global Options”** tab and set **“Resolved caller ID to phone book entry”** to on and **“Minimum length”** to 6 digits. If this option is not enabled then LDAP search will **NOT** work.

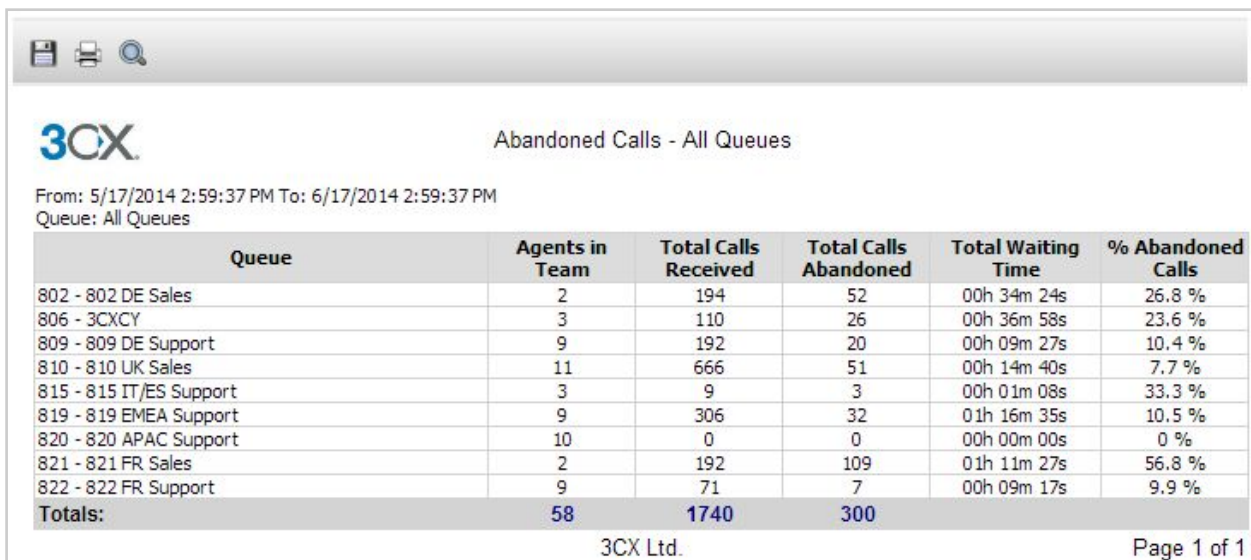
Configuring Company Directory Synchronization - ODBC Search

The ODBC extension for the company directory manager allows your business to connect the 3CX Phone System to any data source which can be accessed via an ODBC driver. In this way any database driven ERP or CRM can import contact data from the shared database when an incoming call is received. A detailed step-by-step configuration guide can be found here: <http://www.3cx.com/docs/odbc-search-phonebook-directory/>.

Call Reporting

Note: These features require Standard or Pro edition.

Introduction



Queue	Agents in Team	Total Calls Received	Total Calls Abandoned	Total Waiting Time	% Abandoned Calls
802 - 802 DE Sales	2	194	52	00h 34m 24s	26.8 %
806 - 3CXCX	3	110	26	00h 36m 58s	23.6 %
809 - 809 DE Support	9	192	20	00h 09m 27s	10.4 %
810 - 810 UK Sales	11	666	51	00h 14m 40s	7.7 %
815 - 815 IT/ES Support	3	9	3	00h 01m 08s	33.3 %
819 - 819 EMEA Support	9	306	32	01h 16m 35s	10.5 %
820 - 820 APAC Support	10	0	0	00h 00m 00s	0 %
821 - 821 FR Sales	2	192	109	01h 11m 27s	56.8 %
822 - 822 FR Support	9	71	7	00h 09m 17s	9.9 %
Totals:	58	1740	300		

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Call Reports

3CX provides a number of reports via its 3CX Web Reports module:

- Call Statistics Reports – These reports provide information on the calls made and received through 3CX Phone System, along with statistical information on the phone extensions and Ring Groups.
- Advanced Call Reports – Reports related to Call costs by Group and Type, Extension Group only, Outbound Calls by Type, and Ring group statistics.
- Call Center Statistics Reports – **Note:** To access these reports you require PRO edition. The reports provide more detailed information on the Queue statistics, call distribution, team statistics, abandoned calls, SLA statistics, callback statistics, and other reports related to a typical Call Center.

Delegating Access to the Call Reporting Module

To allow an extension to access the call reporting module.

1. From 3CX Management Console menu, select **"Extensions"** node,
2. Choose the extension and click **"Edit Extension" >**
3. Switch to the **"Options"** tab > **"Access"** section.
4. Check the **"Allow 3CX Web Reports Access"** checkbox.

Users can also be allowed access to:

- Clear call logs and set call types by checking the **"Allow Admin Operations"** checkbox.
- Download any recorded call by checking the **"Can download any recording"** checkbox.

Accessing the Call Reporting Module

1. From your web browser, go to: **http://YOURPBXFQDN:{chosen port number}/reports/**
Where **YOURPBXFQDN** is the FQDN Address of your PBX server and **{chosen port number}** the HTTP port number you have chosen during installation.
2. Use the same credentials to access the call reporting module as those used to access the 3CX Management Console. A user which has been granted access, can login using their

extension number as the username, and the password the administrator has set for them.

3. Select the desired report from the tree node on the left, and configure any required data or date time filters. Click “**Show Report**” to generate the output.
4. You can export call records to any popular format like pdf, excel, word, rtf and more.

Monitoring your Phone System

Introduction

The 3CX Phone System is easy to monitor for any Windows administrator, since it behaves just like any other Windows Server application. You can monitor 3CX Phone System using your favourite network monitoring solution, for example ActiveXperts or Microsoft Operations manager.

Things to Monitor

Systems Extensions Status

Disconnect Call						
	Status	Extension	Type	IN/OUT	Caller ID	Destination
	Registered (idle)	*0	Park Extension			
	Registered (idle)	*1	Park Extension			
	Registered (idle)	*777	Echo Test			
	Registered (idle)	*888	Echo Call Back Tester			
	Registered (idle)	700	ConferencePlaceExtension			
	Registered (idle)	777	IVR			
	Not Registered	800	IVR			

Monitoring System Extensions

3CX Phone System uses system extensions for services such as IVR, Queue, Fax, Parking and so on. Using the System **“Extensions”** node in the 3CX Management Console you can quickly monitor if all these system extensions are working and registered correctly.















3CX Services

A good first check is to monitor that all 3CX services are running. You can view all 3CX services from the **“Services”** node in the 3CX Management Console. Any network monitoring package can monitor windows services remotely.

Server Events

Events

Send an Email Alert when the following events occur

Someone dials an Emergency Number	<input checked="" type="checkbox"/> 
The status of a trunk changes	<input checked="" type="checkbox"/> 
A trunk failover occurs or max amount of calls available through trunk has been exceeded	<input checked="" type="checkbox"/> 
Trunk/Provider responds to Request with an Error code	<input checked="" type="checkbox"/> 
The registration status of an extension changes	<input type="checkbox"/> 
The license limit is reached	<input checked="" type="checkbox"/> 
An IP has been blacklisted	<input checked="" type="checkbox"/> 
Requests are rejected/blocked by AntiHacking module because of a security breach	<input checked="" type="checkbox"/> 
DNS resolution/Network Failure	<input checked="" type="checkbox"/> 
Stun resolution failure	<input checked="" type="checkbox"/> 
A new service pack or update is released	<input checked="" type="checkbox"/> 
Harddisk is at or near capacity (Windows Server OS only)	<input checked="" type="checkbox"/> 
Call to a blocked country	<input checked="" type="checkbox"/> 
Log in and Log out of 3CX Management console	<input checked="" type="checkbox"/> 

Configuring Email Alerts

The Server Event Log node lists events related to 3CX Phone System. You can configure email alerts to be sent to you for critical events from the **“Settings” > “General” > “Email notifications”**

tab.

These events are also posted to the Windows events log as application events so that you can monitor the events using your network monitoring package. The following server events are posted to the log:

Time	Event Type	Event ID	Source	Description
12/11/2014 10:39:04 AM	Information	4101	3CXPhoneSystem	Extension 100 is unregistered, removed contact: sip:100@192.168.99.43:5077;ob
12/11/2014 10:38:15 AM	Information	4101	3CXPhoneSystem	Extension 100 is registered, contact: sip:100@192.168.99.43:5077;ob
12/11/2014 10:38:02 AM	Information	4101	3CXPhoneSystem	Extension 100 is unregistered, removed contact: sip:100@192.168.99.43:5077;ob
12/11/2014 10:37:31 AM	Information	4101	3CXPhoneSystem	Extension 100 is registered, contact: sip:100@192.168.99.43:5077;ob
12/11/2014 10:32:04 AM	Information	4101	3CXPhoneSystem	Extension 100 is unregistered, removed contact: sip:100@192.168.99.43:5077;ob
12/11/2014 10:26:21 AM	Information	4101	3CXPhoneSystem	Extension 100 is registered, contact: sip:100@192.168.99.43:5077;ob
12/11/2014 10:26:01 AM	Information	4101	3CXPhoneSystem	Extension 100 is unregistered, removed contact: sip:100@192.168.99.43:5077;ob
12/11/2014 10:21:35 AM	Information	4101	3CXPhoneSystem	Extension 100 is registered, contact: sip:100@192.168.99.43:5077;ob

Server Event Log

- A person dialling the Emergency number (ID 4099).
- Changes to the status of a SIP Trunk (ID 4100).
- A trunk failover occurs, i.e. the backup rule is triggered (ID 12289).
- A Trunk or VoIP provider account responds with an error code (ID 12294) - This could happen if your account is inactive or reached the credit limit.
- Upon registration or unregistering of an IP Phone (ID 4101).
- The licence limit has been reached (ID 8193).
- An IP is blacklisted (ID 12290) – This can happen if an IP has reached the maximum number of failed authentication attempts. Frequently this points to a hacking attempt.
- An IP is blacklisted because of too many requests (ID 12292) – This happens if the web server anti hacking module blocks an IP because of too many requests.
- A Call Back request is triggered by the queue module (ID 102).
- Failure of a DNS resolution - (ID 12293) - This event occurs when the remote VoIP provider could not be contacted. This could occur when your internet connection is down or the specified IP or FQDN for the VoIP provider is incorrect or down.
- Failure of resolving an IP via STUN (ID 12295) – This happens when the STUN server is down. This event will also be triggered when the internet goes down.

Server Activity Log

The screenshot shows the 3CX Phone System Activity Log interface. The sidebar on the left contains navigation links: Ports/Trunks Status, Extension Status, System Extensions Status, 3CXPhone Clients, Remote Connections, Phones, **Server Activity Log** (highlighted), Services Status, Extensions, WebRTC Gateway, VoIP/PSTN Gateways, VoIP Providers, Inbound Rules, Bridges, OutBound Rules, Digital Receptionist, and Ring Groups. The main panel displays a log of events with columns for Time, Event Type, Event ID, Source, and Description. The log shows various events related to SIP trunk registration, call termination, and call routing. The top of the main panel has a 'Refresh' button and a 'Show Filter' dropdown. Below this are checkboxes for 'Error', 'Warning', and 'Info', and a 'Verbose' checkbox. There are also filters for 'Filter by date' (From: 18-Dec-2014, To: 12:53:58) and 'Filter by Extension' (All Extensions). The log entries include details about SIP trunk registration, call termination, and call routing.

3CX Phone System Activity Log

Monitor the server status log to troubleshoot issues. This utility shows the activity log of the server, and logs potential reasons for error conditions.

The Server Activity log allows you to easily filter based on Extension, or particular call. In addition,

you can filter the logging by date and time. Enabling Verbose Logging will show additional advanced logging, including the SIP messages for the filtered logging.

Firewall & Router Configuration

Introduction

Undoubtedly, the best place for 3CX Phone System is on a machine behind a firewall. This configuration is easier and more secure. If you only use PSTN lines and do not plan to have any remote extensions, you don't even need to make any changes to your firewall configuration.

However, if you plan to use remote extensions or a VoIP Provider, you will have to make changes to your firewall configuration. In order for 3CX Phone System to communicate successfully with VoIP providers and Remote Extensions, your firewall/router device must be correctly configured for SIP operation.

You can learn more about VoIP and Firewalls in this article: <http://www.3cx.com/blog/voip-howto/firewall-nat-pat-stun/>

SIP ALG

To maximize your chances of success, make sure you choose a device that does not implement a SIP Helper or SIP ALG (Application Layer Gateway), or choose a device on which SIP ALG can be disabled. The following links are examples how to switch off ALG on popular routers:

- [How to Disable SIP ALG on Fortinet / FortiGate](#)
- [How to Disable SIP ALG on Netgear Routers](#)
- [How to Disable SIP ALG on Thomson Routers](#)

Configuration for VoIP provider or SIP Trunk

If you intend to use a VoIP Provider & the 3CX WebRTC Gateway you will need to open the following ports to allow 3CX Phone System to communicate with the VoIP Provider:

- Port 5060 (UDP) for SIP communications (send & receive) **MUST BE STATICALLY MAPPED**. See sample firewall configuration at <http://www.3cx.com/blog/voip-howto/linksys-router-configuration/>
- Port 5061 (TCP) for TLS communications – **If using secure SIP**.
- Port 9000-9199 (or higher) (UDP) (send & receive) for RTP communications, which contain the actual call. Each call requires 2 RTP ports, one to control the call and one for the call data. Therefore, you must open twice as many ports as you wish to support simultaneous calls via the VoIP provider. For example, if you want to allow 4 people to make calls via the VoIP provider simultaneously, you must open port 9000 to 9007.



Note that the above port ranges are the default ports in 3CX Phone System. You can adjust these ports from the **3CX Management Console**, in the **“Settings” > “Network”** node. From this node, you can configure the ports to be used for internal calls, and the ports to be used for external calls being made via a VoIP provider or calls to and from a remote extension.

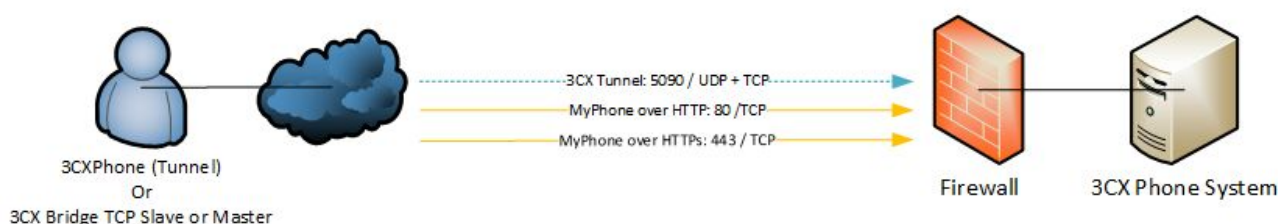
Configuration for Remote Extensions

For remote extensions, you have the choice of using Direct SIP or using the 3CX SBC (Tunnel). The 3CX SBC service will bundle all VoIP traffic over a single port and vastly simplify firewall configuration and improve reliability. 3CXPhone for Android, Windows and Mac have the inbuilt tunnel, whilst using the 3CX SBC service on a remote network you can also connect IP Phones via the tunnel. More information on SBC can be found in next chapter.

Remote extensions via 3CX Tunnel

To connect remote extensions via the 3CX Tunnel, you must open the following ports:

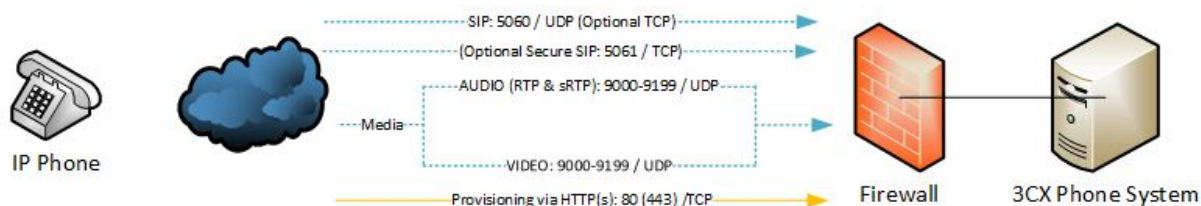
- Port 5090 (UDP and TCP).
- Port 80 HTTP / 443 HTTPS for 3CXPhone Presence. Note: HTTP and HTTPS ports can be configured during installation. If you have chosen to use ports other than 80/443 make sure to forward those.



Remote extensions via direct SIP

If you wish to connect the remote extension via direct SIP, in the case of 3CXPhone for iOS or for single IP Phones, then you must configure the same ports as required for a VoIP Provider or a SIP Trunk:

- Port 5060.
- Port 5061 if using secure SIP.
- Port 9000-9199 for RTP.
- Port 80 HTTP / 443 HTTPS for 3CXPhone Presence and HTTP provisioning. Note: HTTP and HTTPS ports can be configured during installation. If you have chosen to use ports other than 80/443 make sure to forward those.



Firewall checker

After configuring your firewall, run the 3CX firewall checker to ensure that configuration is correct. More information can be found here: <http://www.3cx.com/blog/docs/firewall-checker/>

Example Firewall Configurations

The following are links to example configurations for popular firewalls:

- [Configuring a Sonicwall Firewall for 3CX Phone System](#)
- [Configuring a Draytek 2820 Router for 3CX with QoS configuration](#)

- [Configuring a Zyxel P-662H-D1 Router with 3CX Phone System](#)
- [Configuring AVM FritzBox as a Firewall with 3CX Phone System](#)
- [Configuring a CISCO router to allow connection to a VOIP provider](#)
- [Configuring Linksys router for 3CX Phone System](#)
- [Configuring FortiGate 80C for 3CX Phone System](#)
- [Configuring a WatchGuard XTM Firewall for 3CX Phone System](#)
- [Configuring a pfSense Firewall for 3CX Phone System](#)
- [Configuring a Kerio Control Appliance for 3CX Phone System](#)
- [Configuring a TechniColor Router for 3CX Phone System](#)

3CX Tunnel / 3CX Session Border Controller

Introduction

3CX includes the 3CX Tunnel to allow for easier bridging of remote 3CX Phone Systems and connecting remote extensions. The 3CX Tunnel combines all SIP (signaling) and RTP (media) VoIP Packets from one location and delivers them to and from another location (typically the PBX Server) using a custom TCP protocol. This simple concept allows 3CX to overcome firewall or telecom provider issues. The 3CX Tunnel can be used for the following reasons:

- Resolve issues of NAT Traversal at both the remote and the PBX location.
- Simplified Firewall configuration at both the remote and the PBX location.
- Overcome difficulties with ISPs that block VoIP Traffic based on port numbers.
- Allows VoIP-over-Wi-Fi in some restricted locations, such as Hotel rooms.
- “Fixes” Firewalls that cannot handle VoIP traffic correctly or which are very problematic to configure correctly, such as:
 - Microsoft ISA Server

Note: Presence information does not get carried through the Tunnel to the remote network as of yet. Make sure that the HTTP/HTTPS ports you have chosen during the installation are open on the PBX server side.

How it Works



The image above demonstrates how the 3CX Tunnel works. In this example, the 3CX Phone System is on IP Address 10.0.0.181, and listens on TCP port 5090 (by default) for incoming Tunnel traffic. We must set up a single Port Forwarding rule on the Modem or NAT/Firewall Device, telling it that all incoming TCP traffic received on port 5090 should be delivered to LAN IP Address 10.0.0.181.

The remote setup is shown on the left hand side of the cloud. In this example, the machine with IP address of 192.168.0.2 has 3CXPhone installed. We will need to tell the VoIP Phone the public IP address of the PBX Server (which in this case is 213.165.190.51), and also the private IP address of the PBX Server (which in this case is 10.0.0.181). Since the 3CXPhone will by default use the standard port numbers used by 3CX Phone System, typically no further configuration will be necessary!

Configuring the Tunnel

We will use the above example in “How the 3CX Tunnel Works” to configure a tunnel connection.

Step 1 – Configure the PBX

In the 3CX Management Console, go to the “**Settings**” > “**Network**” > “**3CX Tunnel**” tab.

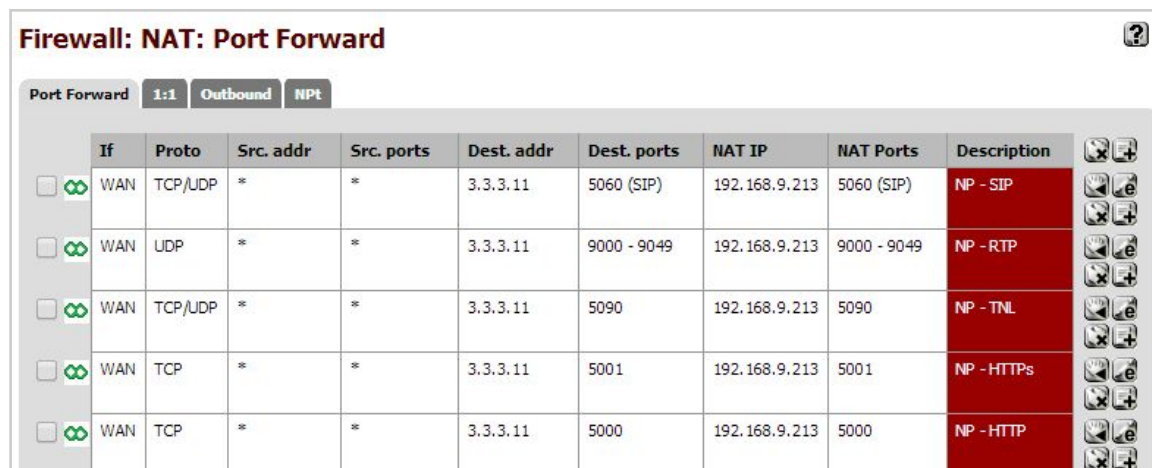
1. Configure the Tunnel Password (e.g. “r6W4Qi”)
2. Set the Local IP to the Local IP Address of the NIC, which will be receiving tunnel

connections. If the PBX has only one NIC, then there will be no need to set this field. In our example this is 192.168.9.213.

3. Set the Tunnel Listening Port to the port, which will be receiving tunnel connections. The default value is 5090.
4. Click “**OK**”. The Tunnel service will be restarted automatically.

Step 2 – Configure the Firewall

The Tunnel protocol is designed to eliminate NAT traversal problems and reduce Firewall configuration work to a minimum. There is only one Firewall setting that needs to be made – we must forward the TCP Tunnel port (set by default to 5090) to the PBX.



Configuring a Port Forward Rule in pfSense

The above picture shows configuration for a pfSense firewall - most firewalls will provide similar functionality. In your firewall:

1. Enable Port Forwarding.
2. Specify the PBX’s Local IP Address (which we had set previously to 192.168.9.213)
3. Set the Type to “TCP”.
4. Set the Port Range to be from 5090 to 5090 (only one port).
5. Set the Comment field to “3CX Tunnel”.
6. Click on the “Add” button followed by the “Apply” button. Your firewall configuration is now done!

Step 3 – Configuring Remote 3CXPhones, Bridges and 3CX SBC

After you have configured the local tunnel connection and the firewall, the tunnel is now “ready for use”. The 3CX Tunnel technology can be used in the following scenarios:

Connect Remote 3CXPhone Users

3CXPhone for Windows, Mac and Android have a built in tunnel that will be used automatically when 3CXPhone detects it is not on the LAN. No configuration is necessary in 3CXPhone.

In the case of 3CXPhone for iPhone, the Tunnel app must be downloaded as a separate app from the Apple App Store, as it’s not allowed to integrate the feature directly into 3CXPhone for iPhone. In this case the user must switch on the 3CX Tunnel App when placing calls. For further information about 3CX Tunnel options in 3CXPhone, see the chapter “**Configuring the 3CX Phone System Clients – 3CXPhone**”.

Connect 3CX Phone Systems via a Bridge

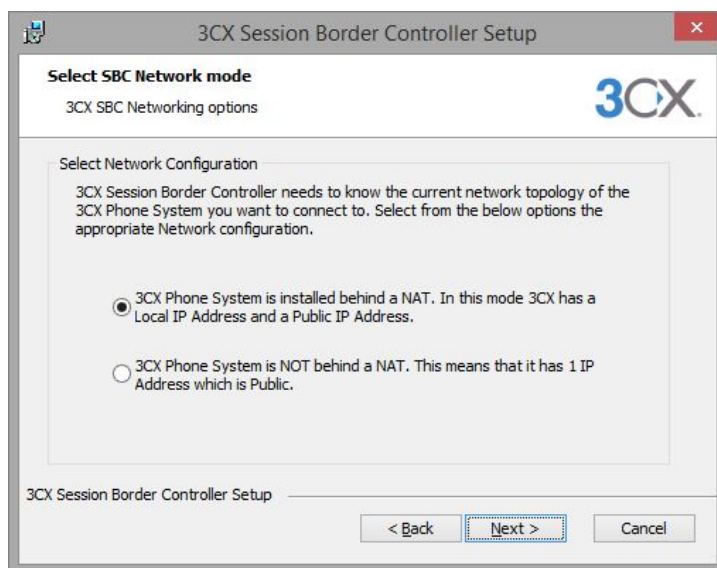
When creating a Bridge to another 3CX Phone System, you can choose to use the 3CX Tunnel rather than a direct connection. To configure a Bridge using the 3CX Tunnel, see the Chapter “**Connecting 3CX - Bridges**”.

Installing and Configuring 3CX Session Border Controller for Windows

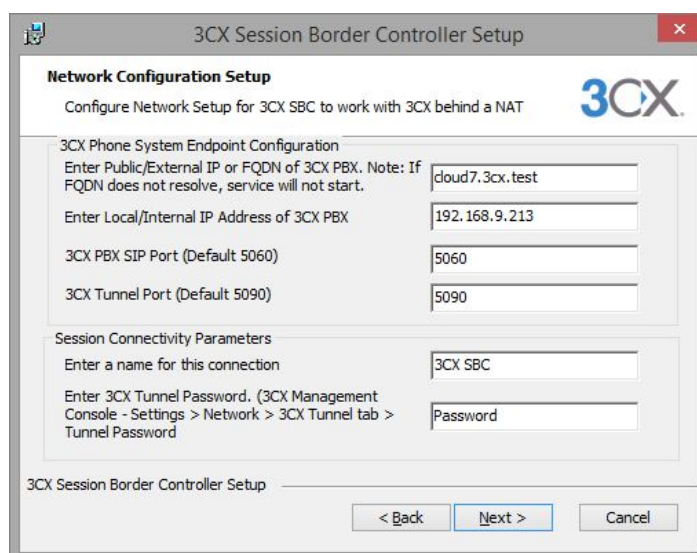
The 3CX SBC is deployed to remote offices where there are more than 2 or 3 IP Phones, to direct only their signaling through the 3CX Tunnel and keep the media streams local. This also reduces the amount of internet bandwidth, that local calls between phones in the remote office, use .

To install and configure the 3CX SBC:

1. [Download the 3CX SBC for Windows.](#)



2. You will be asked whether 3CX Phone System is installed directly on the internet (with the local interface being a public IP Address) or behind a NAT (where the local interface is a local IP Address). Choose the appropriate option.



3. Configure 3CX SBC:
 - **Public IP address or FQDN** of the 3CX Phone System Server.
 - **Internal IP address** of the 3CX Phone System Server.

- **3CX Phone System SIP Port:** Default 5060.
 - **3CX Tunnel Port:** Default 5090.
 - **Enter a name** for this connection.
 - **Enter the 3CX Tunnel Password.** The password can be found in the "**3CX Management Console**" > "**Settings**" > "**Network**" > "**3CX Tunnel**" tab > "**Tunnel Password**" field.
4. Click "**Next**". The installation will proceed and the 3CX SBC service will start.

Installing 3CX Session Border Controller for Raspberry Pi

Installing 3CX SBC for Raspberry Pi comes with some [significant benefits](#). Detailed step by step instructions on how to install and configure 3CX SBC for Raspberry Pi can be found here:

<http://www.3cx.com/blog/voip-howto/install-configure-3cx-sbc/>